HEALTH

For Every Day

Bigelow–Broadhurst

HEALTH FOR EVERY DAY

BY

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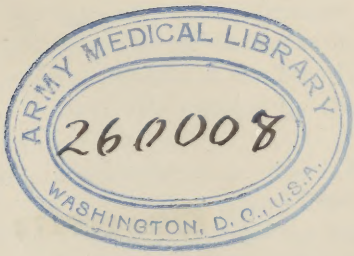

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PREFACE

This book, *Health for Every Day*, is a book on personal health. The second book of this series, *Health in Home and Neighborhood*, summarizes in review form many of the chief principles of personal health presented in the first book; but it is mainly concerned with the healthful or sanitary arrangement and management of homes, schools and the neighborhood. The internal machinery of the human body will be introduced in the second book as far as is helpful to an understanding of personal healthful conditions in the home, in the school and in the neighborhood.

In the books of this series, Health is made to mean more than the merely physical to which it is usually limited. Health Education should no longer have such narrow boundaries, but should be extended to include many problems which concern the mental and social as well as the physical welfare or well-being of humans. From this modern point of view such topics as good manners and good character are matters of health or well-being not less important than digestion and respiration and germ diseases, with which textbooks in this subject commonly deal. In short, the field of the New Health Education is much broader than that covered by the old type of textbooks in physiology and hygiene.

The teacher, school administrator, or school officer who is familiar with the older textbooks in physiology and hygiene will at once notice the absence of descriptions and pictures relating to the anatomy and physiology of internal organs ("insides," the children call them). The only references in *Health for Every Day* to such parts of the body as heart, lungs, liver,

intestines, nervous system, etc., are in the general terms familiar to everybody and, therefore, requiring no scientific description for the application to health covered by this book. Extensive study of health teaching in elementary schools has convinced the authors that, before the upper grades, the scientific study, as such, of the internal organs is a waste of time and in fact dulls the interest even before pupils are old enough to begin the study of real anatomy and physiology of the body. Children of the age for which this book is intended should acquire clear ideas concerning good health and should form correct health habits under the guidance of their teachers and parents. At this age pupils do not need to understand, in fact they cannot be made to understand, the physiological reasons for good health habits.

A second feature of *Health for Every Day* is that at the very beginning of the book emphasis is placed on accidents and other avoidable dangers. No other line of personal hygiene is so easily applied by children or more needed during the entire school year. Therefore the authors believe that Health Education should properly begin with a study of the prevention of accidents and the avoiding of other dangers. The teacher should lose no opportunity to emphasize the safety rules taught in the first lessons.

A third characteristic of this first book is the nature-study basis of many of the health topics. This method of approach to health lessons for children was outlined and discussed by one of the authors of this book in the Nature Study Review, Volume II, 1906. The general idea has been worked out successfully by many teachers who have made their own outlines, but there has long been need of a textbook which uses nature-study for teaching health.

A fourth feature of this book is that the authors have tried to make it a real guide for the study and practice of health. It offers to the pupils numerous problems to be solved, things to

be done, and questions which may be answered only by careful thinking.

A fifth feature is the application of the principles of silent reading to the study of this book. For this important contribution the authors are indebted to Miss Laura Zirbes, Investigator of Reading in the Lincoln School, and Lecturer in Teachers College, Columbia University. At the close of each chapter will be found silent reading exercises under the heading, "Things to Ask, Answer, Tell, or Do." These were prepared by Miss Zirbes, assisted by Miss Della Weed.

Before beginning class work with this book, the teacher should turn to the Suggestions to Teachers and study the discussion of changes in educational method, and the application of the principles of silent reading to *Health for Every Day*. Especially should the teacher pay attention to the directions which Miss Zirbes has given for setting up real purposes for silent reading and to the interesting possibilities for further activity upon the part of the pupil aside from the use of the silent reading exercises at the end of each chapter.

The silent reading exercises have been carefully prepared with a view to covering all the important points in the text in such a way as to test the child's ability to read effectively, that is, to understand and apply what he is reading. At the same time these exercises will tend to stimulate the interest of pupils in the subject matter. The teacher who supplements the required work at the end of each chapter by a thoughful application of the ideas contained in the last pages of the "suggestions" will develop the greatest possible interest of her pupils.

A sixth feature, which the authors regard as of fundamental importance, is the extensive use of pictures for teaching health lessons. That pictures furnish one of the very best means for teaching health lessons to children is no longer questioned. The illustrations in this book are in most cases new to textbooks, and have been planned in harmony with the purposes of

the book. The legends which accompany the illustrations are descriptive, and supplement the text with useful information which should be regarded as an integral part of it. It is important, therefore, that the particular attention of the pupils should be directed to the illustrations.

The authors acknowledge their indebtedness to many persons who have helped in the preparation of the manuscript, especially to Professor Gilbert H. Trafton of the State Normal School at Mankato, Minnesota, and to Dr. Ellen Eddy Shaw of the Brooklyn Botanic Garden, who read the manuscript critically; and to Mrs. Maurice Ricker and Mrs. Dorothy E. Doubble for numerous photographs and drawings.

Since the teacher of Health needs much supplemental information which only a special teacher has time to glean from the numerous reference books, few of which are available for the average busy teacher, a teacher's manual is provided to help those who use *Health for Every Day*.

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FIG. 1. HEALTHY AND HAPPY CHILDHOOD

These children are getting both sunshine and outdoor air as they play "London Bridge is Falling Down" on a recreation pier in New York City. (*Photograph by Elliott H. Wendell*)

CHAPTER I

ACCIDENTS AND DANGERS TO HEALTH

This whole book has been written to show you how to keep well and strong. Leaf over the pages and see how many different things affect health. Watch the older members of your family to find out how much of their time is spent in doing things that relate to health: bathing the baby, washing the dishes, cleaning the house, preparing food, and many other things.

Since health is so important, why should any of us risk losing it by our own carelessness? Even the strongest body can be injured or made helpless for life by a single careless act. Yet many people act as if health were the last thing to be considered, and take any and every risk that comes along. They forget how much work a broken leg may mean for the other people at home. They do not realize how much money one illness or accident may take — money which ought to be spent on good food, comfortable clothes, and restful pleasures for the rest of the family.

Many kinds of work that must be done are dangerous. Here are some examples of such work: mining coal, quarrying rocks, making powder and other explosives, working with high power electrical machinery, repairing wires on high poles, digging tunnels under rivers,

and working on tall buildings. The insurance companies call such work "extra hazardous," and charge for insuring the workers more than they charge for those engaged in ordinary work. Is there any work done in your neighborhood which your father says is dangerous?

FIG. 2. In 1921 a kind man in Pennsylvania made a wooden leg for this injured robin. Is an artificial leg ever as good as a real one for birds or children? (*Wide World Photos*)

We all admire people who are willing to lose their lives or health to save others from harm or death. It is not brave to take needless risks, yet many people do so constantly.

What useless risks have you noticed people take recently? Have you seen one accident that might have been prevented? What are the dangers that you might meet between your home and the schoolhouse?

Warnings to protect people. Many kinds of warnings are now used to prevent accidents. In the railroad cars there are signs which caution us not to put our heads out of the windows; along the road, signs warn us of dangerous railroad crossings; and workmen put up danger signals when they leave holes or places which are not safe in the street or road. Many special

FIG. 3. You cannot keep your eye on the ball and look out for automobiles at the same time. (*Photograph by Edith Ricker*)

devices for preventing accidents have been invented. Railroads often have lights that warn the engineer when another train is on the single track between him and the switch ahead; street railways have similar signals to warn their motormen; trap doors opening into the street often ring bells as they open, so that people walking by will not be injured; and many

motor cars now have a special light or sign which warns the driver behind it when a car is going to slow down or turn a corner.

Our magazines and newspapers are constantly printing articles warning people to AVOID ACCIDENTS, or recommending SAFETY FIRST. Some people think that DON'T GET HURT would be a better warning. Which would make you more careful? Which would make most of the boys and girls you know stop and think before doing dangerous and risky things?

FILL OUT THESE DANGER SIGNS AND WRITE OTHERS YOU HAVE SEEN:

Look out for the ——
Safety ——
School 400 feet ahead: drive ——
Stop, look and ——
Watch your s——
Don't get h——
Dangerous curve, Keep to r——
Cross crossings c——
No s—— allowed in this factory
Beware of the d——
Speed limit —— miles per hour

Dangerous places for play. Big sand piles and wheat bins and even coal piles are dangerous places for little children, because the material may slide with them and carry them down and cover them up. Sand and wheat are especially dangerous because they are made of fine grains which pack so closely together that they may shut out the air. Why is it dangerous for children

to dig caves and tunnels in high piles of sand and loose soil? Watch out for the smaller children who might be injured playing around sand piles, even those which are only a few feet high.

Coasting on streets or roads where there are trolley cars or automobiles is dangerous, especially if there are cross streets or turns. Is there a dangerous coasting place near your home or school?

FIG. 4. When you walk behind a trolley car, look out for cars or automobiles coming in the opposite direction. (*Photograph by Edith Ricker*)

Accidents in games. Some years ago the football rules were changed to give each boy on the team a better chance to play and to make it a safer game.

Are there any games played in your schoolyard or in your town that are too dangerous? If so, can you think of new rules to make them safer?

Street and road dangers. On streets and roads the greatest dangers to life are the motor cars and trucks. Trolleys and trains travel on their own rails, so you

can always see when a crossing is safe, if you take the time to look. It is harder to know about motor cars. They come so fast, and can whisk around a corner so rapidly, that they often surprise even careful people.

FIG. 5. What may happen if this boy falls when another truck is close behind? (*Photograph by Edith Ricker*)

Many drivers are very selfish and careless, and all children should be sure to look in both directions before crossing a street or road. Why should we not cross the street in the middle of the block?

Sometimes, when several children are crossing the street together, they get frightened by a car and run in different directions. Even a careful driver doesn't know in which direction to turn his car then; so in crossing a street with other children, look carefully before you cross, and keep close together.

Tying sleds, coasters, and small wagons behind automobiles or trucks is dangerous. Even more so is holding to a car while you are on roller skates or a bicycle. Even if the driver can see you, it is not fair to expect him to keep on the lookout for children who are where they have no right to be.

One of the most dangerous things that children do is to hang on behind wagons, street cars, or motor cars. Most of the accidents come from falling. You never can tell when a sudden turn or jolt may make it impossible for you to hold on. Even if the wagon or car is going slowly, it may be dangerous to drop off because automobiles may be following.

Another way in which children in our northern states often cause accidents to themselves and to older people is by making ice slides on the pavements. These places sometimes become covered up by the snow, and older people slip and injure themselves when walking over them. Slides of that kind should be covered with sand or ashes before the snow hides them or before you leave them for the night.

Can you think of anything better for boy or girl scouts to do than to prevent such accidents by sprinkling ashes over all slippery places on the pavements? How could you help horses on the slippery spots of the streets or roads?

Cars and machinery. What is the right way to get out of a street car? to get on? to step on and off a moving stairway or escalator? to get out of an elevator? Why is it best not to get into an elevator unless the

FIG. 6. Which boy is getting off this bus in the right way? Why would the other boy find it hard to keep his balance as he steps off? (*Photograph by Edith Ricker*)

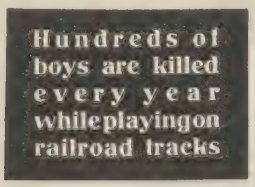
elevator man is there? What might happen in stepping off or on a moving elevator?

Which boy in Figure 6 is stepping off in the direction in which the bus is going? Is he more likely to fall than the other boy?

On June 30, 1922, four boys in New York City sneaked up to a motor car parked beside the curb and

released the brake. The car rolled down the hill, ran into a place where a man was digging a cellar, and crushed him. Who was responsible for that man's death? Four foolish boys, who were too cowardly to own up to what they had done and who had to be hunted up by the police.

Many accidents are caused by people who handle machinery and other things they have no right to touch. It is foolish to go where heavy or dangerous machinery is at work. We should always obey DANGER and KEEP OUT signs.



Hundreds of people are killed every year while walking along railroad tracks, in spite of the signs that tell them to keep away. Whose fault is this?

Many people think it is "smart" to see how near they can go to the edge of a cliff or roof. Even brave people often grow dizzy when on high places, such as trestles and cliffs, especially if water is moving below them. The sensible thing is to stay away from such places — even if foolish people try to dare you or tease you to go.

Dangerous fun. Every year we read of a boy or girl who pushed or tripped another child just for the fun of hearing him cry out or of seeing him fall. Last

year one little girl in Brooklyn was made lame for life by a boy who tripped her as she walked down the schoolroom aisle. In the same month a little boy in New Jersey was tripped on a stone stair by a bigger boy, and his skull was fractured. In neither case did the boy mean to hurt the other child; he did it "for fun." Pulling chairs out from under people, ducking or pushing them overboard, or putting strings across the path are all mean kinds of play. What do you

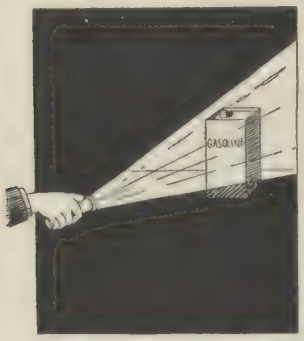


FIG. 7. A small electric torch may be bought for about sixty cents. Is it worth "taking a chance" with matches?

think would be the right thing to do with a person who shows so little sense in his fun? How can we make boys and girls feel that such things are not at all funny?

Danger from fires. In Chicago about fifty years ago, five hundred people were killed and one hundred thousand other people lost their homes, just because one careless person put a lantern down in the hay or straw while milking a cow. It is said that the cow kicked the lantern over and that started a fire that burned down a great part of the city.

We ought to use electric flash lights instead of lanterns or matches in places where there is material such as paper, excelsior, hay, gasoline, and natural or artificial gas, that catches fire easily. There are not so many fires from Christmas trees since people began using small electric lights instead of candles. Should

Fig. 8. This girl is rolling over and over to put out the fire. Why would it have helped if someone had wrapped a coat or rug around her also?

"artificial snow," made of cotton, be used for Christmas decorations? Why are Fourth of July fires so frequent?

Do not leave matches where mice or rats can chew them and so start a fire. Keep matches in a closed box made of some material like tin that will not burn, or else use safety matches.

Putting out fires. Fires cannot burn without air. Light a little candle and put it inside a lamp chimney. Does it burn as well, with the chimney around it, as it did before? Cover the top of the chimney with a

piece of tin or a jelly glass cover. What happens to the flame then?

Why do we open the stove door below the coal or wood, or open the damper in the stovepipe, when we want the fire to burn faster or brighter? Why do we fan a fire when we want it to burn better? Why are there openings at the bottom of gas and kerosene burners?

If you wanted to put out a little fire, how would you do it? Sometimes little children play too near a bon-

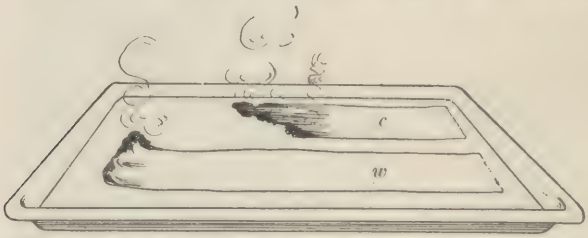


FIG. 9. These strips of cotton (*c*) and woolen (*w*) cloth were each eight inches long and they had burned two minutes before this picture was made. Which dress material is less dangerous near an open fire?

fire and their clothing catches on fire. Why does the fire burn faster if they get frightened and run away? How could you help put out such a fire?

If a fire starts in the house, what could you use to smother the flames? Would cotton dresses or woolen coats be better to cover the burning clothes? Which burns faster? Your teacher will help you answer these questions by performing an experiment in which she burns strips of cotton and woolen cloth. Which kind of clothing is more likely to catch fire when near a fireplace or a bonfire?

Have you a fire extinguisher in your schoolroom? What is in the fire extinguisher? How does it work? Read the directions carefully to see how to use it in case the teacher is not in the room when a fire starts.

In some cities firemen go to every school once a year and tell the children how to put out fires and how fire

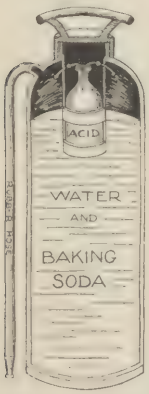


FIG. 10. To use this kind of fire extinguisher you must turn it upside down so that the acid and soda become mixed and make a gas which when poured upon a fire will smother it.

extinguishers work. Who will do that for your school? Perhaps the boys and girls in the high school chemistry and physics classes could do it. Twenty-six of our states have laws requiring the schools to teach fire prevention. Is your state one of them?

Avoiding fire dangers. In time of fire most people become very frightened and "lose their heads." Do you think you would be one of those who "keep their heads"?

In almost every case of fire there is a safe way to get out. Often all the people rush for the same door or window, and so they get jammed together in the

hallway or on the stairs. Sometimes one person falls down and others fall over him, blocking the passageway; and then many people may be hurt.

If other people rush, stand back out of the way. You will have a better chance after the crowd has passed.

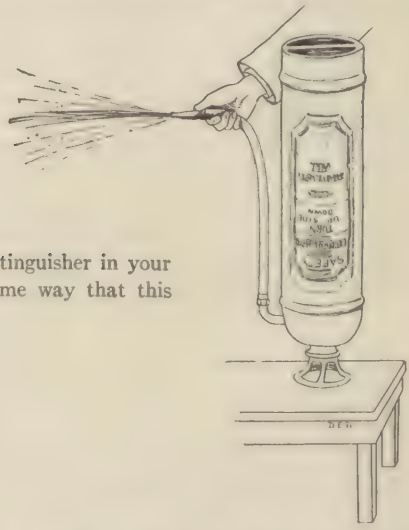


FIG. 11. Does the fire extinguisher in your school work in the same way that this one does?

Besides, you may find a way then that you were too frightened to see before.

When you go into a moving picture house, a lecture hall, a theater, a hotel, or even a strange apartment house, notice where the exits are, and decide what would be the sensible thing for you to do if some one called "Fire!"

How many fire exits are there in your school building? From how many places could children in your schoolroom reach the ground safely? Could your class

get out in five minutes? in three minutes? At the next school fire drill pretend there is a real fire, to see if the class can keep from becoming excited, and can get to the ground in less time than ever before.

How many ways are there of getting out of your house and down to the ground? How long would it

Fig. 12. This boy knew that in running through smoke the baby should be wrapped in a blanket, and a wet cloth should be tied around his own mouth and nose.

take you to get out if you were up and dressed? How long would it take you to get out of bed, dress, and get to a safe place? Why not play that getting up and dressing in the morning is part of a fire drill? Time yourself to see exactly how many minutes it takes, and then try every day to beat your own record.

Another thing every one should do is to decide what is the thing most worth saving in case of a fire. People often carry out useless things. Once at a fire a man was seen carrying something out of a house, holding it carefully in both hands; he took it across the road and put it down in a big armchair. What do you think he had carried out of that burning house? It was an old gingham apron!

Every member of the family should have some idea of what he could do to help most. Who sleeps nearest the baby's bedroom? Who is strong enough to help grandma out? Who can be trusted to pick out the best clothes and tie them into a sheet with good strong knots? If there is much smoke, who'll know where to find some big handkerchiefs which can be wet to tie around the mouth and nose? A wet handkerchief needn't be kept over the mouth all the time; you can pull it down, and let it lie around your neck until you are in a smoky place.

Why we should learn to swim. Do you know of any one who was drowned because he did not know how to swim?

Is there any place near by where you can learn to swim? If not, learn the swimming motions by balancing yourself on a stool, practicing them until you can make your legs and arms move in the proper way with good strong strokes. Practice floating when lying on your back in the bathtub, or in water not over two feet deep.

Even though you learn to do these things, you may

not be able to swim if you accidentally fall into the water, because falling into the water frightens most people very much. Still, practice may help a little. If you know the strokes, it will not take you long to learn when you do have a chance to go into the water.

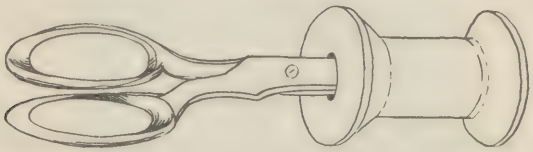


FIG. 13. Spools, big corks, or even pieces of corn-cobs can be used as guards for the sharp points of tools like knives or scissors.

If a person who cannot swim falls into the water, what can he do to help himself?

It is much harder to swim with one's clothes on, and that is one reason why people should be very careful

FIG. 14. Why are these dangerous? How can accidents with them be prevented?

about moving around when they are in small boats, and about skating or walking on thin ice. Even people who can swim well in their bathing suits may be unable to swim when their heavy clothes become filled with water.

Dangerous tools. Once a paper printed an advertisement like this:

> Send 30 cents and an addressed envelope to.....
> to find out how to use a knife without cutting yourself.

Many people sent money, and all they received in return was a little printed card like this, which told them something they had known all their lives.

CUT FROM YOU

This is one of many rules you should know about the use of sharp or dangerous tools. How should you carry scissors? a sharp knife that doesn't close up? a

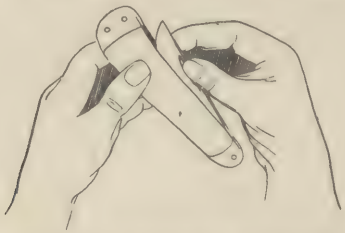


Fig. 15. Why is this the proper way to open a knife?

sickle or grass hook? an ax or a hatchet? How should you open a penknife that has a stiff spring?

Keeping smaller children from getting hurt. The Little Mothers League in New York City teaches little girls how to care for the babies in their families. Last year in New York State there were ten thousand little girls who were members of Little Mother's clubs. How many girls in your school belong to such clubs?

What are some of the ways Little Mothers or Big Brothers could keep smaller children out of danger?

Make a Little Mother's card or a Big Brother's card which gives all the things older girls or boys should keep in mind to guard and protect little children on the city streets or in the country.

Children have been seriously injured by older boys

FIG. 16. What dangerous thing is this two-year-old holding? What might happen if she were startled or fell out of her chair? (*Photograph by Edith Ricker*)

and girls who enjoy scaring or frightening younger children. In 1923 several children pretended to bury one little girl alive in sand, and after months of illness she finally died from the effects of that terrible ex-

perience. The same year two boys pretended that they were going to burn two younger boys whom they tied to a stake; the fire which they started got beyond their control and killed both of the smaller boys.

No one has any right to scare or frighten little children. It may make them very nervous, even if it

FIG. 17. This sad-eyed girl is too small to be a member of a Little Mother's League, but she must watch the baby's carriage while the mother works to earn money to buy food. (*Courtesy of Henry Street Settlement*)

does no other harm to them. Only very thoughtless or stupid or mean boys and girls act in such ways. It is almost as mean to scare animals, such as dogs and cats. What do you think of a boy who would tie a tin can or a fire cracker to a dog's tail? How should such a mean boy be punished?

Mouth and throat accidents. Little babies sometimes swallow things that choke them, or poke things into their ears or noses. There are other accidents that may happen to older children's mouths or noses or ears. Sometimes they choke on something that they have been holding in the mouth, such as a pin. Or

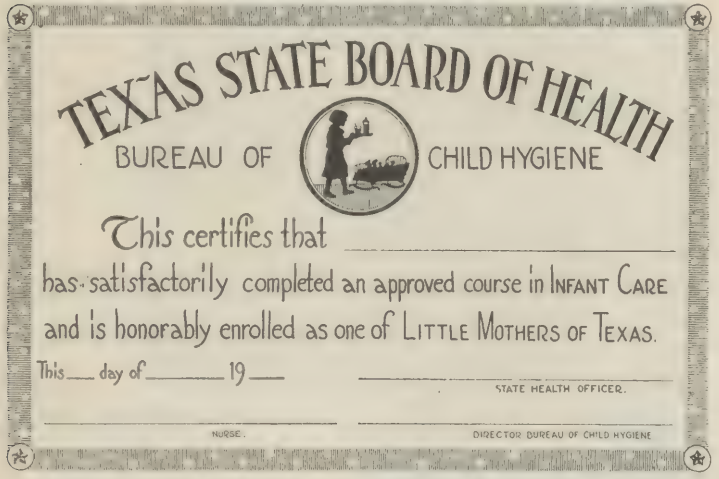


FIG. 18. A certificate like this is given to Little Mothers in many states.

they choke on a fishbone that they did not notice in the food they were eating.

If a bone or a penny gets caught in the throat, it often can be loosened by coughing or by vomiting. The patient may be made to vomit by tickling the throat back of the tongue with a feather or a bit of cotton on the end of a stick or pencil. A doctor can usually take out the troublesome object with a pair of pincers, but sometimes he may find it necessary to

FIG. 19. Many little children have been seriously injured by falling when they had pencils in their mouths. (*Photograph by Edith Ricker*)

have the patient swallow some soft food like mashed potatoes or wet bread, that will stick around the button or penny in a big ball or lump and help work it down. If sharp things like pins get down into the throat, never try to swallow them, but call a doctor at once.

Sometimes a little child falls on a pencil, fork, or spoon that is carelessly kept in the mouth when climbing from a chair or while walking or running. In case of a deep cut in the mouth, tongue, or lips, a doctor should be called at once.

Cuts or bruises. If you cut or scratch your skin, put on a little medicated alcohol or iodine to make sure you do not leave any live germs in the cut place. Wrap the cut in clean gauze so that no other germs can get in. Try not to let the bandage get wet or dirty, for germs may get into the cut. Change the bandage every day, so that you can see whether the wound is

healing as it should. If it becomes inflamed, or begins to "fester" or "gather," use a little more iodine before putting on a fresh bandage, and let a nurse or doctor look at it.

Treat bruises and scraped places in the same way as

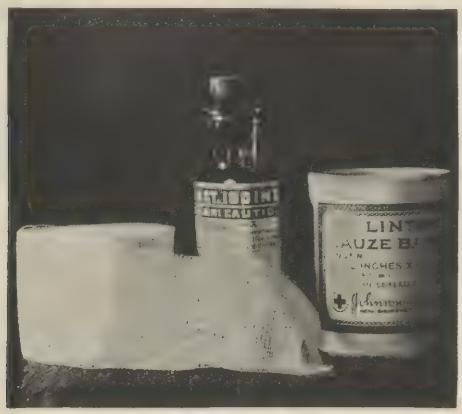


FIG. 20. Thin gauze, like the kind shown here, is steamed to make sure it is free from germs before it is sealed in packages like the one on the right. A little iodine on a cut or bruise will also help keep bacteria from growing in a wound. (*Photograph by Edith Ricker*)

you would a cut. It is very important that wounds should be kept clean — especially big ones.

Be careful not to hit the scab and break the wound open. It is a good plan to use vaseline or a salve after a scab forms over the wound, as that helps keep the scab soft, and makes the wound less likely to split open if you happen to strike it.

If bruises are bathed in very hot and then in very cold water, over and over again, it takes out some of

the soreness and may keep the skin from turning black-and-blue.

Burns. A bad burn should be treated by a doctor as soon as possible, but even bad burns can often be made more comfortable while waiting for a doctor. Put on something like salad oil, if you haven't any special medicine for burns. Covering the burned part with oil or vaseline keeps the air out, and makes it hurt less.

A few years ago a man was burned very badly. The only other person in the building was a young girl working in the office. She rushed into the grocery store next door and snatched three cans of olive oil from the shelves, picked up a can opener that was lying there, and rushed back to the burned man before the grocer knew what had happened. The doctor said her quickness saved the man's life; at any rate, it saved him a great deal of pain.

Sprains. Sprains or breaks need the care of a good doctor, but until a doctor can come, wrap the injured part in wet gauze. You may use water, but boric acid solution is better, especially if the skin is scratched or injured. Sometimes sprains are treated like bruises, with hot and cold water.

Harmful plants. There are a good many plants, such as nettles, that may poison the skin, but the one that harms the most people is the poison ivy. This is a vine, though sometimes it grows around a stump or a dead tree in such a way that it looks almost like a bush or tree. The poison ivy has yellowish-white berries, and its leaves are made up of three parts or

leaflets. In the fall the leaves turn to beautiful reds and yellows, and people often pick them, not knowing

FIG. 21. This poison ivy shows two leaves, each with three leaflets and two clusters of berries. Its brilliant red or yellow leaves are often picked by mistake in the autumn.

how dangerous the plant is. You can tell which is the poisonous one if you remember the old rhyme:

Berries red,
Have no dread;
Berries white,
Poisonous sight;
Leaflets three,
Quickly flee;
Leaflets five,
Live and thrive.

Some people are poisoned without even touching poison ivy — just by having air that has passed over it blow on them. Would noticing how the wind is blowing help them to keep from being poisoned?

If you are easily poisoned by this plant, and think you have touched it, wash your hands before you touch your face or any other part of your body. Wash them in hot running water; use plenty of soap — cheap laundry soap is best; and let the water run away each time as you make more lather and wash over and over again.

If you haven't running water, use several different waters, basin after basin, until you feel sure you have rinsed off the last bit of poison. After you have washed your hands thoroughly, wash your face or any other part of your body which may have touched the ivy. The poison of this plant often clings to shoes and other clothing for some time. If you think you have any on your clothes, it would be safest to wash them with soap before wearing them again.

If the skin itches or becomes red or pimply, it often helps if we cover the spots with "new skin" or liquid collodion, or with a soapy paste made by rubbing a soft cloth over wet soap. If the poison spreads over much of the body, or forms large blisters, a doctor should be called.

Alcohol. There are two common kinds of alcohol. When we speak of alcohol as medicine, or of an alcoholic drink, we mean alcohol that we get from fermenting fruit juices, sugars, or grains like rye or wheat.

There is another kind of alcohol that looks much the same, but is much more poisonous to the body. It is called wood alcohol, because it is usually made from wood. This wood alcohol may be used in alcohol lamps and stoves, and for making varnishes, but it must not be used as a drink or a medicine, because it is very poisonous and may cause blindness and even death.

FIG. 22. These two kinds of alcohol are poisonous when taken into the stomach. Always follow the directions on the labels.

Even its vapors are very harmful, and therefore its use is forbidden in many factories.

The drug stores no longer sell the first kind of alcohol in its pure form, unless it is ordered by a doctor. A special prescription is required by the prohibition law. It may be sold if something is put into it to make it unfit to drink but which will not spoil it for treating wounds or rubbing the skin. It is then called denatured alcohol or medicated alcohol.

Medicines. All medicines should be kept in a closet or chest which should always be kept locked to prevent very little children from taking pills or other medicines that are harmful or even poisonous.

In case this happens, the first thing to do is to make the child vomit — to get rid of as much of the poison as possible. Warm water — not hot water, but just lukewarm — makes many people vomit. It is better to add a little ground mustard; if you do not happen to have any in the house, a little salt will do. Medicines should never be kept where young children can get them.

Things to do. While most of us know how to avoid accidents and other injuries, we are often very careless about things that are dangerous or risky. Here are several "things to do" which will make it easier to remember to be careful.

1. Make a "safety first" picture book, with a *do* or *don't* rule under each picture.

2. Write out a list of the traffic rules used in your town.

3. Make a list of things you will not let your little sisters or brothers do.

4. Make a Silly Goose or a Foolish Fish book. Here are some rhymes to help you to start your book:

A Silly Goose is Jennie Rand,
She runs with scissors in her hand.

A Foolish Fish is Charlie Morse,
He walks too close to a strange horse.

A Silly Goose is Fanny Cox,
Who matches keeps in a paper box.

5. Find spools or corks to cover the points of the school scissors or knives.

6. What is the most dangerous corner or crossing in your town? How could it be made safer?

7. Make a list of all the things we must know, to keep from being hurt when we are walking on the street or road.

8. What are the things a careful driver keeps in mind?

9. What are the things to look out for when we are playing?

10. What rules should we follow when we are boating or swimming?

FIG. 23. This boy tried to "beat the automobile" at a street crossing in New York City. (*Courtesy of Henry Street Settlement*)

11. Make a "first aid" chart. In this column there are six things that often help people who have met with accidents or are in dangerous places or conditions:

Wet compress
Alcohol or iodine
Covering with oil and keeping air out
Hot or cold compresses
Cold water on head
Lying down flat.

FIG. 24. The next picture shows what happened because this little girl made two mistakes as she started down the stairs. (*Photograph by Edith Ricker*)

FIG. 25. Now she wishes she had "watched her step" and used the hand rail. (*Photograph by Edith Ricker*)

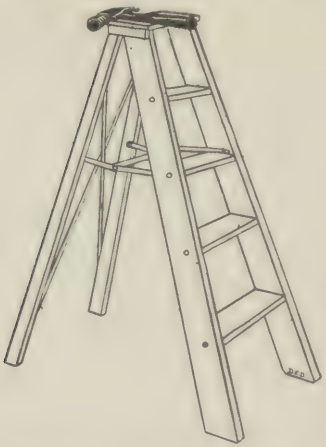


FIG. 26. Why is it dangerous to leave such things as hammers and pails of water on stepladders?

Which of the remedies just mentioned would help a person who is feeling faint? Which would help in the case of a burn? a bruise? nosebleed? sprain? a cut?

Copy the list on a sheet of paper, and show when you would use each "aid." Your paper will begin like this:

Wet compress.....Sprain
Alcohol or iodine.....

12. Make a list of the dangers or dangerous places between your home and your school. With the help of your parents and your teacher think of ways to avoid them.

13. Write an answer to each of the questions on the next page and see whether your classmates agree.

WHAT MAY HAPPEN IF YOU

(1) Throw banana skin on sidewalk
(2) Climb electric poles
(3) Pull a chair from under another person
(4) Go too near a strange horse
(5) Ride a bicycle between two street-car tracks
(6) Play ball on a busy street
(7) Roller coast off the sidewalk
(8) Cross a street in the middle of the block
(9) Skate on thin ice
(10) Rock a boat
(11) Step off a moving elevator
(12) Put head or arms out of a car window
(13) Use oil to start a fire
(14) Play with fire
(15) Roll stones over a high cliff or hillside
(16) Aim a bean-shooter at other children's eyes
(17) Use a sling shot
(18) Ring a false fire alarm
(19) Climb in buildings under construction
(20) Throw sand or pebbles at passing automobiles
(21) Do not look before crossing car tracks
(22) Climb on rotten branches of trees
(23) Walk on top of fences
(24) Play with guns and pistols

THINGS TO ASK, ANSWER, TELL, OR DO

1. List five things done in your home every day to help keep you in good health.

2. Have you ever been sick because of your own carelessness? If so, tell about it.

3. Tell about some accident which you know of that need not have happened.

4. Make a list of all the warning signs in your neighborhood.

5. What do you understand "Safety First" to mean?

6. Make a list of dangerous places in which children often play.

7. Are there any dangerous places in your neighborhood where some children like to play?

8. What do you do in order to be safe when you cross a street on which automobiles pass?

9. Make a list of things which children do in innocent play that might cause accidents to other people.

10. What can you do to help prevent accidents to other people?

11. Make a story of a trip to a city store, telling just how you would act in order to be safe when getting on and off cars, elevators, etc.

12. Tell the story of the four boys who killed a workingman.

13. Tell one of the stories in this chapter about an accident caused by dangerous fun.

14. Tell of some accident caused by playing jokes.

15. Make a list of "don'ts" to remember about the use of matches.

16. In case of fire in your home, what could you do to help?

17. Why should you know how to swim?

18. Give reasons why those who know how to swim should be careful in boats. How can you learn the stroke before going into the water?

19. Make a rule to follow in handling sharp or dangerous tools.

20. Make a list of five things which older children can do to protect little children on the city streets or in the country.

21. Why should we never frighten young children?

22. How can a person be helped to get rid of a bone or penny stuck in the throat?

23. Should a doctor be called in case of choking? When?

24. What is the danger from a cut or scratch on the skin?

25. How should any injury to the skin be treated?

26. What can be done to take out some of the soreness from a bruise?

27. How should bad burns be cared for before a doctor treats them?

28. What should be done for sprains or breaks?

29. How can you know poison ivy?

30. What should you do as soon as you find that you have touched poison ivy?

31. What kinds of alcohol are poisonous?

32. What should be done in case a child gets into the medicine chest and takes harmful or poisonous medicine?

33. Choose one of the twelve things listed under "Things to Do," and do it as well as you can.

34. Turn to Chapter IX and find why we should be very careful how we handle fireworks.

FIG. 27. This cat is pretending that her playmate, the dog, is a real enemy. (*Wide World Photos*)

CHAPTER II

PLAY AND WORK

The play of animals. All children like to see young animals, such as kittens and puppies, play. Have you ever watched a kitten or a puppy at play? What did it do? Did you ever see an old cat or an old dog play? Did it play just as the young one did? Have you seen calves, colts, and lambs playing? What other animals have you seen playing? What do they do? Do they "run races," or chase each other? Do they pretend to

fight each other? Do they jump or make any other interesting movements? Do they play with toys, such as balls or spools?

Wild animals also play, but very few people ever see them playing. Dallas Lore Sharp, in his book of animal stories called *A Watcher in the Woods*,* tells us how to catch them at it:

Take a moonlight night in autumn and hide in the edge of these woods. There is to be a rabbit party in the clover

FIG. 28. Wild animals play as much as the tame ones. (*After W. J. Long*)

field. The grass has long been cut and the field is clean and shining; but still there is plenty to eat. The rabbits from both sides of the woods are coming. The full moon rises above the trees, and the cottontails start over. Now, of course, they use the paths which they cut so carefully

* Published by the Century Co.

the longest possible way round. They hop leisurely along, stopping now and then to nibble the sassafras bark or to get a bite of wintergreen, even quitting the path, here and there, for a berry or a bunch of sweet wood grass.

The feast is finished, and the games are on. Four or five of the rabbits have come together for a turn at hop-skip-and-jump. And such hop-skip-and-jump! They are professionals at this sport, every one of them. There is not a rabbit in the game that cannot leap five times higher than he can reach on his tiptoes, and hop a clean ten feet.

Over and over they go, bounding and bouncing, snapping from their marvelous hind legs as if shot from a spring-trap. It is the greatest jumping exhibition that you will ever see. To have such legs as these is the next best thing to having wings.

Why animals play. Some wise men who have watched animals at play have come to believe that they play because they feel well and strong, and enjoy playing. Sick and tired animals do not play; perhaps they have a headache or toothache or a "tummyache," or they simply feel too tired to play.

People used to think that most of the play of young animals was quite useless, because they did not seem to be making any of the motions that are necessary for getting food, for escaping from enemies, for fighting their enemies, or for caring for their young ones. These are things that wild animals must learn to do in order to live.

Scientific men who have studied young animals have found out that play is not useless. It helps the muscles to grow in size and strength. It teaches the young ani-

mals how to get food, and how to run away from their enemies, and how to defend themselves. These things are all useful when the parent animals no longer take care of the young ones. For example, a mother wolf or wildcat feeds her young ones nothing but milk for the first few weeks, until they learn to eat meat from the animals which the mother and father kill for them.

FIG. 29. How does wrestling help boys prepare for life? (*Courtesy of Colgate Company*)

FIG. 30. Two bears at play, wrestling as boys often do. How will this play help them in their later life? (*Courtesy of Colgate Company*)

When they are several months old, the mother ceases to give them milk or meat, and leaves the young ones to find their own food and protect themselves against their enemies.

The other day the wind blew a big leaf across the yard, and our Maltese kitten chased that leaf down the path and all around the flower bed. Just as the kitten

pounced upon the leaf, the wind blew a shutter off the house and it fell with a bang. The kitten jumped into the middle of the flower bed and stayed hidden for a long time. Why did she chase the leaf? What was she learning to do? Why did she hide in the flower bed?

Why children play. Children, and even older people, are like animals in that they usually play when they

FIG. 31. This kitten is working just as hard to get a leaf from under this doorsill as if it were a mouse. What do young animals learn from such play? (*Photograph by Edith Ricker*)

feel well. Do you like to play when you feel ill or tired? Did you ever forget that you were not feeling well when a playmate came to play with you? Sometimes when we are not very well, it makes us feel better to go out of doors and play some quiet game.

Often when children play they imitate the work of older people. They play school, they keep house, they build boats, and they run trains. Did you ever play this way? Most children learn a great deal by such

play, because it leads them to see how older people do their work.

One of the most important things about play is that it gives us a feeling of pleasure and happiness. We usually think of play, such as the play of children, and many games like golf and tennis played by older people,

FIG. 32. These children are having fun and active exercise in the open air, with a rope made from their belts. (*Wide World Photos*)

as something that is not useful, but we shall see later that this is not true.

The scientists say that the real reason why all healthy children and most older people like to play is simply because we are born with a play instinct, which means that playing is just as natural as breathing and eating. Watch a baby one to three years old to see if this is true. What do babies do when they play?

Play and work. Of course you have heard the old saying that "All work and no play makes Jack a dull

boy." Why would work without play make any boy dull?

Some work can be done in such an interesting way that it seems like play, and not a disagreeable task, as it was to Jack. Can you think of several kinds of work which you like to do? Do you ever try to make work more interesting? Some boys and girls run races while doing errands. Can you think of any way of making a game out of dishwashing, or dusting, or weeding the garden, or carrying wood? Most work does not make dull boys and girls, unless it is too hard or is carried on so long that the worker gets really tired. Some boys and girls get a lot of fun out of trying to see if they can do a task in less time, or better, than they did it the first time.

Many kinds of useful work can be made as interesting and as delightful as play for a time, but if continued too long they may become as tiresome as Jack's work did. For example, it is fun to hold the garden hose and sprinkle the road or lawn for a half hour, but you would find it hard work to hold the hose eight hours a day.

Exercise develops the body. Play and work both help to develop the body, especially the muscles. In what part of the body are muscles developed most in walking? in running? in turning a grindstone? in sweeping with a broom?

In Lew Wallace's story, *Ben Hur*, the hero, a young prince only seventeen years old, was unjustly sentenced to work for life as a slave on one of the galleys or war

vessels used in ancient times. He was one of over two hundred prisoners who were chained to the oars of the galley.

Ben Hur soon noticed that those who had been prisoners a long time were very bent, because each man rowed but one of the long heavy oars, and always from the same seat — on the same side of the boat. Finally, he gathered enough courage to ask the master of the galley to allow him to change his position from one side of the boat to the other. Why did he ask to change?

After Ben Hur had escaped from the galley, he was driving in a four-horse chariot race when an enemy struck his spirited horses. The horses were crazed with fear, because they had never felt a whip before; but Ben Hur's three years of steady hard work at the oars had given him such strength in his arms that he held the frightened horses to their course and won the race.

Exercise for the whole body. But exercise should develop all our muscles, not only our arm and leg muscles. It is fine to have the strongest grip and the largest arm muscle; but to have a strong, healthy body, all our muscles must be in good condition.

We have in our body over five hundred different muscles, and many of the small ones, such as those in the walls of the chest, are very important indeed, even though we do not feel or see them move, or think about them.

What exercise do you get that uses muscles in several

different parts of your body? Which of the following are good all-over exercises: running, swimming, gardening, tennis, writing, baseball, wrestling? Can you think of two more?

If your usual work or play develops only a few muscles,

FIG. 34. This position is not quite natural; it is not so good as that in Fig. 33 because shoulders are too high and chest too far forward. (*Photograph by Edith Ricker*)

FIG. 33. This is a good standing position. Compare this picture with Fig. 34. This is the position for beginning the exercises in Figs. 52 to 57. (*Photograph by Edith Ricker*)

try to exercise the other parts of your body in some other way. Why is walking a good kind of exercise for a bookkeeper or a shoemaker? What would be good for mail carriers or policemen, who walk a great deal?

What kind of exercise would you take if you had to sit long hours at such work as sewing, typewriting, or reading? What do you find restful after having been in school all day?

Watch a baby who is learning to walk. Is there any

FIG. 35. When you pull a door toward you does it touch your body at these three places: forehead, chest, and toes?

part of his body which does not get exercise as he walks and tumbles around the room?

Standing and sitting as muscle exercise. Keeping good standing and sitting positions is really exercise, especially for the chest and back muscles. Some people find keeping a good position the hardest kind of exercise.

A poor sitting or standing position is due to the forming of a bad habit, to carelessness, ignorance, or

just laziness. Have you ever heard the expression, "Too lazy to even sit up"?

If you are really too tired to sit or stand correctly, lie down or rest in any comfortable way for a few minutes, but do not allow yourself to sit or stand much of the time in a lazy, slouching way. That leads to

FIG. 36. What will happen if you carry your books in either of these ways every time? (*Photograph by Edith Ricker*)

bad position habits, which, like all bad habits, are very hard to break.

Do you stand properly? Here is a way of finding out. Walk toward a door, and stop near it in your natural standing position. Then pull the door toward you, as in the picture, until it hits your toes. If your standing position is good, the door will touch you in

three places: your toes, your chest, and your forehead. If it does that, you are standing as you should, with your chest *out*, your head *up*, and your chin *in*.

Test yourself in this way several times today; do it until you begin to have a feeling that tells you when you are standing well. Try the door test every morning for a week, to see if you are improving in your standing position. Hang a plumb line on the porch, or from the limb of a tree, so that you can test yourself occasionally when playing out of doors.

FIG. 37. Why is this a better way of carrying a load than either one in Fig. 36? (*Photograph by Edith Ricker*)

Changing positions during exercise. You are not galley slaves like Ben Hur; you are free to arrange your own positions. Do you sit with one shoulder higher than the other when you write? Why is it a good plan, when carrying school books or packages, to change the weight from one side to the other every few minutes? Do you always use the same hand for holding fast to the car handles or straps? Is the same hand always uppermost as you sweep or chop or shovel?

Changing the position of our feet and legs is also

important. Many people always stand with the weight on the same foot, or with the same knee bent outward like one of the boys in Figure 63. Soldiers are drilled until they have formed good position habits, but during the short rest periods their officers allow

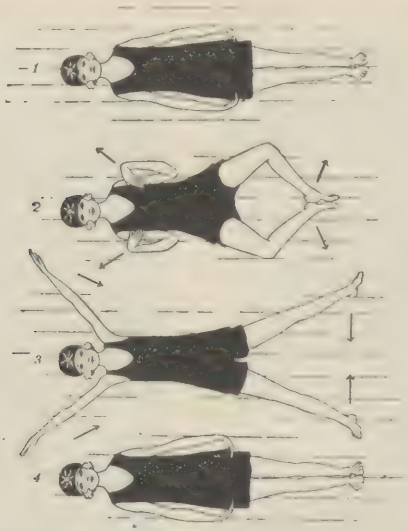


FIG. 38. Swimming on the back is one of the easiest ways for beginners. Lie on the floor and practice the arm and leg movements pictured here.

them to take any position they find comfortable, no matter how lazy or slouching they may look.

Swimming as exercise. Everybody should know how to swim, not only because it is good exercise and good fun, but for safety. Many people have been saved from being drowned because they were able to swim well enough to keep afloat for a few minutes until help came. Boys and girls should learn to swim before

they are twelve or thirteen years old. Many girls and boys between six and ten years of age are good swimmers.

When you begin your swimming lessons do not go into water deeper than up to your shoulders. Even when you have become an expert in swimming it is best not to take any unnecessary risks in deep water,

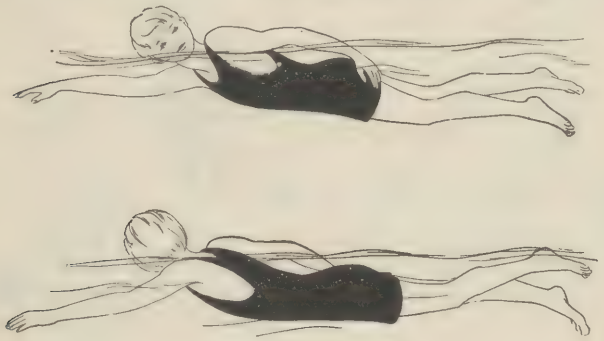


FIG. 39. Many children find it easy to learn the "crawl" in which first one and then the other arm reaches forward above the water and then dips and draws back to the side. At the same time the body is turned and the legs "paddle" or move as in positions 2 and 3 in Fig. 38.

for sometimes even expert swimmers have sudden attacks of painful contractions or "cramps" of the muscles, which make them helpless.

Exercise should be regular. Baseball is a summer game, but the players of the big ball teams start practicing months before summer begins, and practice every day. If you want to win in a running race or a relay race next June, when should you begin to practice?

How often each week should you practice? Would

once a week be often enough? Or would it be better to practice every day?

Is there any special exercise *you* should take every day? Or do your play and work give you enough of the right kind of exercise?

Other reasons for exercise. Perhaps you do not need any more exercise to develop your muscles, but other kinds of exercise, instead. There are two other

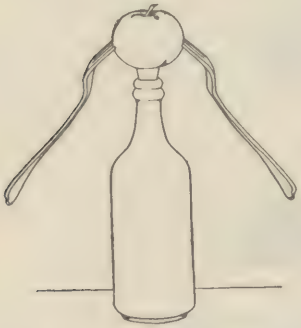


FIG. 40. These forks and the apple do not fall because the weight is equally balanced on each side of the cork. Why is it easier to walk a tight-rope if we carry a long pole?

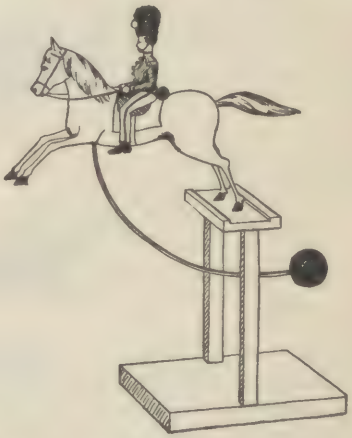


FIG. 41. The ball of lead in this toy balances the horse and rider because the weight is the same.

things exercise does for us. It makes us alert and able to act quickly. It also gives us a better control of our bodies in another way — what we call "balance."

Exercise for balance. Did you ever try to walk a tight-rope? Some people learn to do it very easily, because they have a very good sense of balance. Try walking on the curbstone or the edge of the pavement,

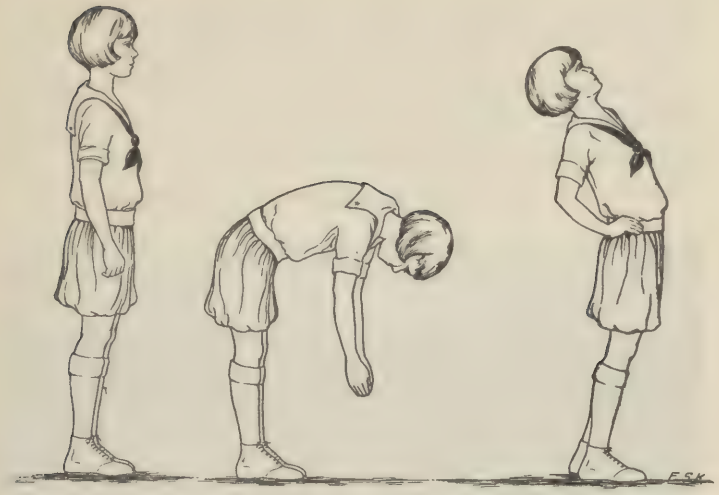


FIG. 42. You can bend forward or backward without losing your balance as long as not more than one-half your weight is in front of or behind you, but you will see that your body is balanced like Fig. 40 if you try bending while standing on the narrow side of a brick.

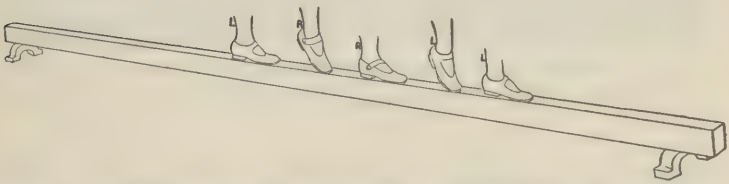


FIG. 43. After you have learned to walk on a balance beam, make up some "fancy steps" to test your balance. Here is one. Stand with your weight on your left foot, tap with the right foot and then step forward with the right foot. Then tap and step with the left foot, and so on, the full length of the beam.

if the street is not crowded or dangerous. How many steps can you take without slipping off?

Have you a balance beam in your school? If not, perhaps the railroad or the street car company will give you some old car rails for your school yard. Try walking on these rails, and see how many times you

FIG. 44. This five-year-old boy can keep his balance, even though his aquaplane is being pulled very rapidly across the water. (*Wide World Photos*)

can walk up and down a rail without slipping off. Who is the champion beam or rail walker of your class?

Which of these balancing games or "stunts" can you do well: walking a rail, carrying a cupful of water on your head, walking on stilts, riding a bicycle, playing

hop-scotch, and "bounce stick"? What is the most difficult balancing game you know?

Exercise for alertness. What is the quickest animal you know? Did you ever see any animal move more quickly than the squirrel in Figure 45? What other animals need to be quick and alert?

Do people need to think and to act quickly? Will thinking quickly help you in crossing the street? in

FIG. 45. Do you know any animal quicker or more alert than a squirrel? How long does it take a squirrel to run up a tree? (*Courtesy New York Zoölogical Society. Photograph by Sanborn*)

driving a motor car? Have you ever heard of people who "take all day" to do things? Or of people who are "as slow as molasses in winter time"?

If you were hiring people to work for you, would you hire the slow kind? Would they get much work

done? Would slow policemen or firemen be good public servants? Would they be likely to get out of danger quickly? Would they think and act quickly enough to help others out of danger?

Make a list of the ways we describe quick, alert people. Can you find any besides these three:

1. As smart as a whip.
2. As bright as a button.
3. As quick as a flash.

Which of these games demand quick thinking or quick action: tennis, dodge ball, football, baseball, relay races, hurdle races, hop-scotch, puss-wants-a-corner, slap-jack, Simon says "thumbs up," jacks, marbles, skating, tag, and jumping rope?

What kind of training can you give yourself to help you become quicker and more alert?

Do you hear every time people speak to you? Does it take you a long time to begin to do what you are told? Are you the first or the last to follow the directions in your physical training exercises? Does the physical training teacher "catch you napping" when the marching directions are changed quickly?

Once two men who were painting a picture on the ceiling of a church were working on a high scaffold. One stepped back to get a better view of his work, and, without realizing it, stepped farther back than was safe. Just as he reached the edge of the scaffold, his companion saw the danger. Instantly he smeared his own paintbrush over the painting, and that made the man step forward, to save the picture. If the

friend had taken one more second to think of and carry out his plan, it would have been too late. What might have happened if the friend had shouted, instead of acting as he did?

Some papers and magazines for boys and girls have a story in every number describing a boy or a girl who thought or acted very quickly. Find a story of that kind and bring it to school for your next reading lesson. Learn to think and act quickly. Don't be like the slow people who have to say, "I would have done it, too, if I had thought of it."

Play and work should not be too hard. An ant can carry more than a hundred times its own weight. How much would a boy weighing 75 pounds have to carry if he carried one hundred times his own weight? Most people cannot carry very heavy weights, and many strong men cannot carry even as much as their own weight.

Trying to lift very heavy weights is not good for growing children, because they may strain or injure themselves, even though they do not feel it at the time. Never try to lift very heavy things, just to see how much you can lift. Should little children try to lift one another, or to carry one another around?

Many of our states have laws to protect children from working too long and from doing work that is too heavy or too hard. But there aren't any laws that tell you how hard you may work at your play. Your own common sense has to tell you what you should not do, and when to stop running, jumping rope, or other exercises that tire you.

Children have to be more careful than grown people. Do you remember the story about George Washington and the young colt? Ask your teacher to tell it to you, if you do not know it. Perhaps fright had something to do with the colt's death, but it is quite certain that the colt was made to run too fast and too long.

Exercise and the heart. We can tell something about how hard our work or exercise is for us by finding out how much faster it makes our hearts beat. This can be done by counting the pulse, which gives a throb every time the heart pumps or pushes a new lot of blood along.

The following table gives the average rate for the heart or pulse for children of your age:

Age	Heart or Pulse Rate
5– 9 years	104–90 times a minute
9–10 years	92–84 " " "
10–13 years	88–82 " " "

Take a watch which has a second hand, and time your pulse as you sit quietly in a chair. Figure 58 shows you the common way of counting the pulse or heartbeats. How many times does your heart beat in a minute?

Stand up for about ten minutes and then take your pulse. Is it faster or slower? How much? Is standing harder work or less work for the body than sitting down?

Next take some vigorous exercise — running, jumping rope, or hopping on one foot — for about five min-

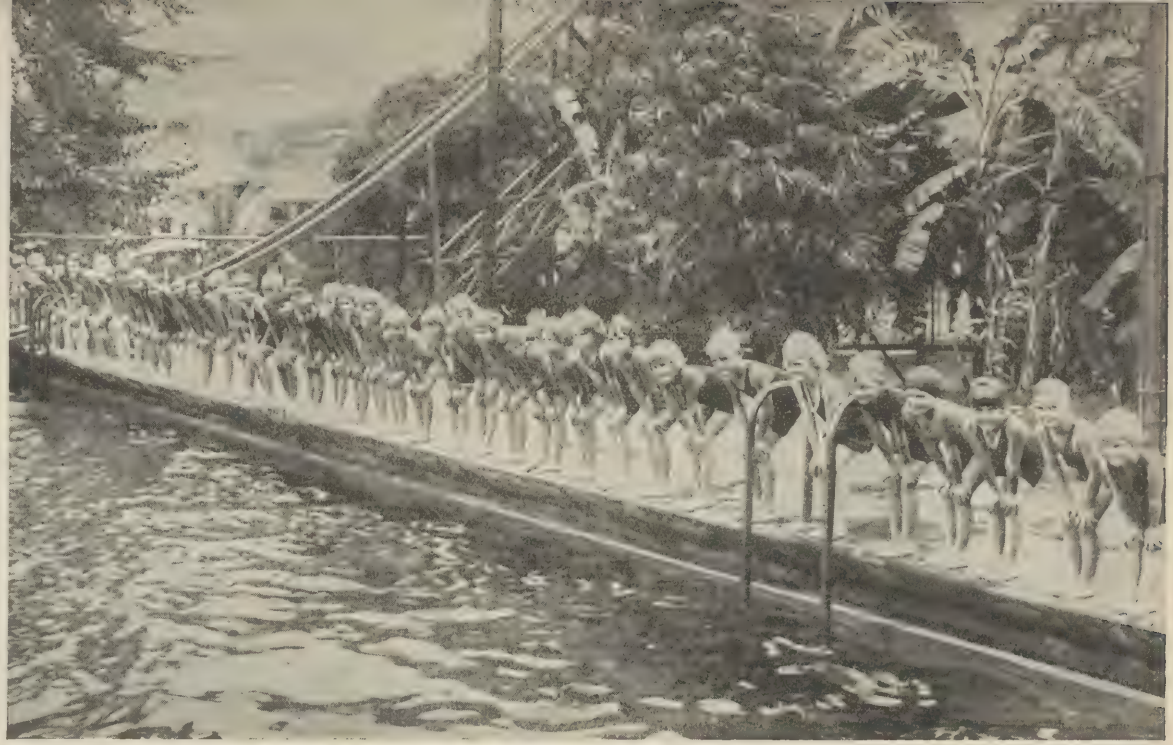


FIG. 46. This prize-winning team from the Panama Canal Zone visited the United States recently. These children know that swimming is one of the best kinds of play. (*Wide World Photos*)

FIG. 47. Walking so the feet make tracks like this is the best way.

FIG. 48. "Toeing out" is not a good way to walk. Try walking in sand or along a crack in the floor to see whether you walk like Fig. 47 or Fig. 48.

utes, and then time your pulse. How does hard work affect the heartbeat? Why does overwork sometimes injure the heart?

Is studying or reading or playing the piano or playing jackstraws or playing marbles as hard as running or jumping? How can you prove it?

The wrist is one of the easiest places to count the pulse. Can you feel the pulse on your temples?

Find a place on the side of your neck, just under your chin, where you can feel the pulse. Would this be a good or a poor place to count a fat person's pulse? Can you find another place where you can feel the pulse distinctly enough to count it?

People who train for running races do not start off each time at top speed. They begin slowly, and by degrees work up to their fastest speed. They save some strength for a spurt at the end.

Baseball players know it is better to begin gradually. Watch the players in the next ball game you see, and notice how they put in a little gentle practice before the game really begins. They call it "warming up." Why do trainers exercise their horses a little just before the race begins?

What games do for us. Here is a long list of games and other recreations for boys and girls. Copy this table on a sheet of paper, if you do not own this book, and put a mark in each space if the description at the top of the column fits that game. Two games, tennis and jackstraws, have already been marked to show you how to do it.

Games and Recreations	Makes us More Alert	Gives us Better Balance	Develops our Muscles
Tennis	×	×	×
Baseball			
Moving-picture shows			
Tag			
Blindman's buff			
Snap-the-whip			
Skating			
Gardening			
Jackstraws		×	
Swimming			
Motoring			
Duck-on-the-rock			
Red-rover			
Drop the handkerchief			
Scout hikes			
Fishing			
Hockey			
Jacks			
Coasting			
Dodge ball			
Potato races			
Bird walks			

Clothing and exercise. Sometimes our clothes are too warm or too heavy for our games or exercises. Sometimes they are not loose enough to allow the blood to circulate rapidly in the muscles that are working. We usually know when our shoes are too tight; but sometimes our other clothes keep us from doing our best, because they are too tight or because they "pull" or get in our way.

If our work or exercise makes us very warm, we should remove heavy or warm outer clothing before the body becomes overheated. When we stop working or exercising we cool off, and at such times we should keep out of a draft, or put on an extra covering, to avoid being chilled.

After you read the chapter on clothing and the skin, turn back to this page to see if you can add anything to this lesson on clothing and exercise.

Food and exercise. Some of our food is used for fuel and gives us the energy for hard work and play, just as coal or oil gives the engine its power or energy.

FIG. 49. Find another picture in this book which shows clothing which might interfere with movement. (*Courtesy of Henry Street Settlement*)

Does it take more or less gasoline for an automobile to go the same distance uphill as on level ground? Do you need more or less food when you work or play hard than when you just sit and read? Why?

Make a list of all the things you did yesterday during every hour, from the time you got up until you went to bed. During which hour did you use the most food material? When did you use the least?

Ask your teacher to keep the sheet of paper with your answers until you finish the chapter on food, and then to allow you to make any necessary corrections in your own paper.

Making work easier. Work is good for us, but we all like to find ways of making our work easier. Then we can do our work more quickly or do more work in a day. It pays, therefore, to make our minds help our bodies work. Think, for example, how hard it must

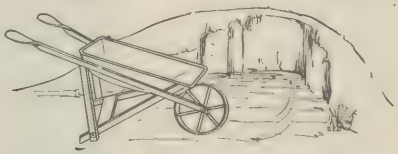


FIG. 50. Once a whole hill in Africa was leveled down by workmen who took the earth away in baskets they carried on their heads. Even a simple machine like the wheelbarrow would have been a great help to them.

have been to move or pull things from place to place before somebody thought of making wheels.

Get some spring scales and pull a heavy weight, like a box of books, across the floor, and see how many pounds the scale registers. Then place the same box of books on a wagon or anything that will roll — four tin cans or two pieces of broomsticks will do — and see how much less pulling you have to do.

Thousands of tools and machines have been invented to do the work that is necessary in the world. Some of these are quite simple, like crowbars, jackscrews, and pulleys. A carpenter or a blacksmith could show you many tools that make his work easier.

Many farm machines which have come into use since

1850 make it possible for one man to do as much work in a day as several men did in our grandfathers' time. Some examples of these machines are: mowers for cutting grass, reapers for harvesting wheat and other cereals, two-row planters, hay loaders and unloaders, threshers, milking machines, cultivators, tractors, and potato diggers. Ask some farmers to tell you how these and other machines make farm work easier and quicker.

Some household machines, such as sewing and washing machines, vacuum cleaners and electric flatirons, make housework easier and pleasanter than in the days of our grandmother.

FIG. 51. A pogo stick or bounce stick is good fun as well as good exercise. (*Wide World Photos*)

Besides making it possible for us to do more work, all such labor-saving devices and machines are important for another reason. They give us more time not only for rest and recreation, but also for improving our minds by reading and study.

SCHOOLROOM EXERCISES

On rainy days when you cannot take the usual outdoor exercise try some of the exercises which are shown in the pictures on the following pages. These can be taken while standing beside your desk. They are vigorous enough to make the blood circulate faster and they exercise most of the large muscles, in the trunk as well as the arms and legs.

FIG. 52. Change from the correct standing position to the high stretching position on the left. Practice ladder climbing as on the right also; and pretend you climb up and up until you go out of sight, like Jack in the story of Jack-and-the-Beanstalk. (*These photographs and the following sets were made by Edith Rieker, after the series given by Dr. Jesse F. Williams in the Teachers College Record*)

FIG. 53. Pretend to pick up something near the floor (right picture) and, turning the body, put it down on the opposite side (left picture). (*Photographs by Edith Ricker*)

FIG. 54. Two positions in pretending to throw a ball. (*Photographs by Edith Ricker*)

FIG. 55. This exercise is more vigorous than that of Fig. 53 because what you pretend to pick up on one side, you turn and place on the highest shelf you can reach. (*Photographs by Edith Ricker*)

FIG. 56. Crouch ready for a spring, jump straight up into the air, and come down where you stood before. (*Photographs by Edith Ricker*)

FIG. 57. These pictures show how you can stand in your place and ye pretend to walk (right) or run (left), counting "one," "two" as yo change feet. (*Photographs by Edith Ricker*)

THINGS TO ASK, ANSWER, TELL, OR DO

1. Give two good reasons why children should play.

2. Give three or four ways in which you can turn your work or chores into play.

3. What do you do, either in play or work, that exercises several of your muscles at the same time?

4. Is there any part of your body which does not get enough exercise?

5. Why is it so important to keep good sitting and standing positions?

6. How can you test your standing position to discover whether it is good or bad?

7. Make a list of changes which you should make from time to time in order to develop both sides of your body evenly?

8. Make a list of sports which are good exercise.

9. Why should exercise be regular, that is, every day, or at stated times.

10. Give three reasons for exercising.

11. How can you develop what is known as "balance"?

12. Name four ways in which you can train yourself to act more quickly.

13. If it is possible to overexercise, how are you going to tell when to stop?

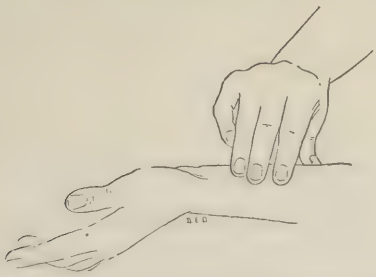


FIG. 58. To "count the pulse," press the tips of your fingers on your wrist.

14. How does exercise affect the heartbeat?

15. What effect does overexercise have on the heart?

16. Give two rules which should be followed in regard to clothing and exercise.

17. Make a set of directions, which your class can use in school, for the exercises on this page.

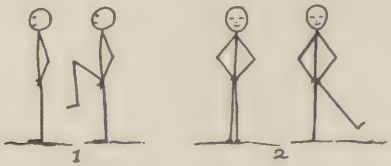


FIG. 59. Practice short quick movements, counting "one," "two," as you do these exercises. Exercise both left and right legs and arms. (*After C. Mosher*)

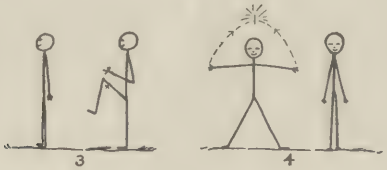


FIG. 60. These exercises are more difficult than those in Fig. 59. You will have to jump when you do number 4, because you move both legs at once.

FIG. 61. These are both good back or trunk exercises. Pretend to throw sand over your head as in number 5; can you touch your toes as in number 6?

CHAPTER III

REST AND SLEEP

Have you read the story of Rikki-tikki-tavi,* the mongoose who killed a whole family of cobras? It was hard work, you remember, and when he had finished, he "curled himself up in the grass and slept and slept till it was late in the afternoon, for he had done a hard day's work."

The need for rest. Do all animals stop to rest? What do dogs do when they have been running hard? What does a careful driver do with his horse when it has been moving rapidly, or hauling a heavy load until tired? Have you ever watched young farm animals playing in the pasture? Do they ever stop to lie down and rest? Do birds fly during all the daylight hours? Do fishes in a brook or aquarium swim all the time? Do flies and butterflies stop to rest?

When you have answered all of these questions correctly, you will see that animals are not moving all the time, that they stop from time to time for rest.

Some kinds of machines, such as engines or motors, can keep going all day long without stopping for rest. Pumping engines in mines have run six months, and airplanes and automobiles have crossed the United States without stopping their engines even once.

*In *The Jungle Book*, by Kipling.

No living animal or human being could keep going as a machine can, because the muscles would get so tired that they would refuse to keep on working. In six-day bicycle races the riders must stop for short rest periods and to get some food and sleep. Soldiers on the march are allowed to stop for rest whenever the commanding officers think that the men are getting overtired.

Why children should rest. It is important that children stop to rest many times between breakfast and

FIG. 62. What animals, besides the cat, always sleep on the side? Try lifting your kitten's legs when she is asleep, and notice how "loose" her joints seem. Do you relax as much as cats do when you rest or sleep? (*Courtesy of Cornelia Clark*)

bedtime, because while they are growing rapidly it is not good for them to get too tired. Horsemen begin to train colts even before they are one year old, but great care is taken to keep these growing horses from becoming very tired. Colts that are driven too long or too fast are not likely to grow up to be strong and well-developed horses. What might happen to children who play and work too hard and too long?

Ways of resting. If you feel tired all over, it is best to lie down for a short time in any comfortable position, such as on your back, or lying on one side curled up like a cat. Good positions for sleeping will be described later in this chapter.

If only the legs are tired, we can rest by sitting or

Fig. 63. Find two different resting positions in this Boy Scout group. (*Courtesy of Underwood and Underwood*)

lying down so as to take the weight off the legs. When standing for a long time, we naturally change the weight from one leg to the other, so as to rest each leg in turn. In the schools to which our grandfathers went, boys who played in school and did not study their lessons were punished by having to stand up straight

FIG. 64. Which of these children need to be told how to sit when at work? (*Wide World Photos*)

and close to the walls in the corner of the room. If you keep close to the corner you cannot get a chance to rest your legs by shifting your weight from one leg to the other. Try this position yourself and see how quickly your leg and back muscles begin to get tired.

When working with one arm, it is often possible to rest it by changing to the other. Many persons who

are right-handed do things quite well with the left. Can you write your name with either hand? throw a ball? drive a nail with a hammer? turn a crank? button your coat? whittle with a knife? cut your finger nails?

Write a list of things that you can do best with one hand, but can do with the other also. You should practice doing as many things as possible with the hand you do not generally use, because a change gives rest to a tired arm and hand. Then, too, it is often very convenient to be able to use either hand. Children who are naturally left-handed should practice using the right hand as much as possible, because many tools are made to fit the right hand. Have you ever seen left-handed scissors, rip-saws, grass-hooks, or sickles?

FIG. 65. Is this chair suited to this little girl? Can you think of one reason why little children are so often restless, when older people want them to "sit still"? (*Photograph by Edith Ricker*)

Sometimes a change rests us almost as much as

sitting still or lying down. If we have been working hard in the garden or house, we can rest by sitting down and reading. If we are tired out playing tennis or ball, we can rest by playing a more quiet game.

FIG. 66. Which girl in this open-air school in London, England, has the best sitting position for work? Why? (*Courtesy of the director of the school, Mr. H. Broughton*)

After studying in school all afternoon, we find that outdoor games rest us very much.

Sleep. We do not rest enough during the hours we are awake, and so several hours of sleep are necessary every night. All animals sleep, most of them at night. Do you know any animals which sleep during the daytime and are wide awake at night?

Have you read about Father Wolf, in Kipling's *Jungle Book?*

It was seven o'clock of a very warm evening in the Seeonee hills when Father Wolf woke up from his day's rest, scratched himself, yawned, and spread out his paws one after the other to get rid of the sleepy feeling in the tips.

FIG. 67. Making beds properly, as taught to boys in camp, should be practical at home. (*Courtesy of Henry Street Settlement*)

What was Father Wolf doing, awake at night, when most other animals were sleeping? Why should pet cats be kept from wandering at night? Have you heard of animals that take a very long sleep during the winter?

What time do you go to bed? What time do you get

up in the morning? How many hours do you sleep? The right number of hours for children of your age is shown in the next table. Do you sleep long enough? If not, how can you plan to get more hours for sleep each night?

TABLE OF HOURS CHILDREN SHOULD SLEEP

5 to 6 years	.....	13 hours
6 to 9 "	.....	12 "
9 to 12 "	.....	11 "
12 to 15 "	.....	10 "

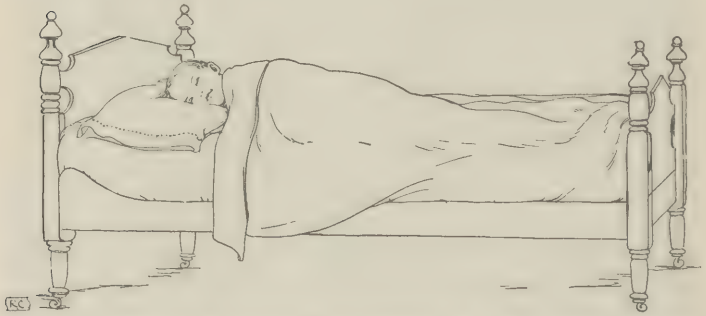


FIG. 68. Sleeping on the side is considered the best as well as the most natural way.

Little children should go to bed soon after the evening meal, because by that time they are tired and need the complete rest that sleep brings. If they stay awake too late, they are likely to get overtired, even though they do not show it.

There is no better rule for sleep than the one written by Benjamin Franklin in *Poor Richard's Almanac:*

> Early to bed and early to rise,
> Makes a man healthy, wealthy and wise.

Getting up in the morning. It is best to get up as soon as you are wide awake in the morning. If you go to bed at the same hour each evening, you will soon form a habit of waking at the same time in the morning. This regular habit is better than an alarm clock. As soon as you are wide awake, jump out of bed, bathe, or at least wash your hands and face in cold water to "take the sleep out of your eyes," and

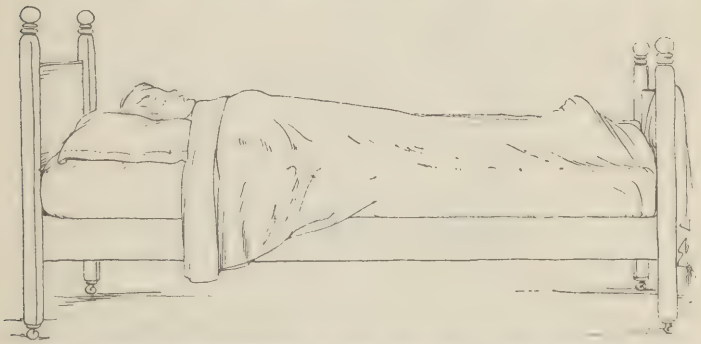


FIG. 69. Many persons snore and keep their mouths open when they sleep on the back.

brush your teeth. Then dress and get ready for breakfast. If breakfast is not ready, see if you can help with the work by carrying wood or water, getting kindling wood, sweeping the porch or sidewalk, feeding the chickens, or doing any other little piece of work that needs to be done. These exercises will give you an appetite for breakfast. If there is no work that needs to be done, go out for a short walk, or, in good weather, play out of doors until breakfast is ready.

If you happen to wake before the regular hour for

getting up, try to go to sleep again. In this way you are less likely to form a habit of waking at the wrong time. Do you know how to "count sheep" to put yourself to sleep? If this doesn't put you to sleep, play quietly with some toy until rising time, unless you can get up without disturbing the rest of the family.

FIG. 70. Doctors agree that children should not sleep on high pillows.

FIG. 71. Would this boy get plenty of good fresh air even if he slept out of doors? When children sleep on the stomach they often bury their faces in the pillows.

How to sleep. At night, as soon as you have bathed, get into bed before you feel chilly. You should sleep on either your right or your left side, like the boy in Figure 68. Many people find it best not to sleep at night lying on the back, but that position is restful for short periods. How do animals such as dogs, cats, horses, and cows sleep? Did you ever see them sleeping on their backs? It does not seem natural for any backboned animal to sleep on its back.

FIG. 72. A sleeping hood of canvas or any heavy material can be tacked to a window screen as you see in the picture.

It is best for children to sleep alone whenever possible. Most people move from time to time when sleeping, and so are likely to disturb any one who is sleeping with them. Did you ever watch a litter of puppies or kittens sleeping? Do they move when they are asleep? Do they growl or snarl when they are disturbed by the others?

We should not disturb any one while he is sleeping. Mothers and nurses try to keep the house quiet when the babies are sleeping. This is not just because the

babies will cry if wakened, but because a long, quiet sleep is more restful than several short periods of sleep.

A short period of sleep, often called a "cat nap," is very restful if taken when one is very tired at noontime or in the middle of the afternoon. Doctors often advise that children should lie down to rest, even if

FIG. 73. When the ground is dry, "roughing it" in this way will not harm you, if you have heavy blankets to keep you warm. (*Courtesy of the Henry Street Settlement*)

they do not sleep, especially if they are "nervous" or not very strong. This helps to keep them from becoming overtired.

Have plenty of fresh air in your sleeping room. This does not mean a draft strong enough to blow small articles around the room. If the open windows or

doors cause strong drafts, a screen or sheet should be placed so that the incoming air does not strike your bed directly.

Sleeping outdoors. We should sleep out of doors, in tents and on porches, whenever possible. A good time to begin is while camping during the summer vacation, but we should be careful to have a waterproof tent or blanket and plenty of other clothing, so that the body does not get chilled. If one gets accustomed to sleeping out of doors during warm weather, it is not difficult to keep on in the autumn until the weather gets quite cold. In fact, with plenty of blankets or with sleeping bags, some people prefer to sleep outdoors throughout the winter.

If we cannot arrange to sleep out of doors in tents or on porches, it is very easy to arrange a "sleeping hood" at a window, as shown in the picture.

THINGS TO ASK, ANSWER, TELL, OR DO

1. Can you name any animals which do not need rest?
2. Why do children and young animals need much rest?
3. How can you rest even while working?
4. During which of the 24 hours of the day do you get the most rest?
5. How many hours of sleep should you have?
6. Make a program which you can follow from the time you waken in the morning until you start for school.
7. Make three rules on "how to sleep."
8. Why should people sleep out of doors as much as possible?
9. What is the next best thing to do, if you cannot sleep out of doors?

FIG. 74. Good food, outdoor exercise, and happy times like this make healthy children. (*Courtesy of Henry Street Settlement*)

CHAPTER IV

FOOD AND WATER

Importance of food. Getting food is the main business of life for most animals. Watch cows or sheep in the pasture, if you do not believe this, and see how they spend most of their days. Watch butterflies, caterpillars and house flies, and see if most of their time is spent getting food. How do birds spend most of their time? In one cuckoo's stomach were found over 250 caterpillars. How long do you think it took him to collect so many caterpillars?

We don't have to spend so much time eating as cows and pigs and sheep do, because we eat different kinds of food. Our food is not mainly grass and other leaves; we also eat parts of plants that have stored up food — grains and fruits and roots. When cows and horses are given such foods (corn, oats, etc.) instead of grass alone, they get along very well on three meals a day, just as we do.

Dogs are often given but one meal a day. Some people, too, prefer to eat but one meal a day, but most people feel better if they have two or three meals each day. If we eat too much at one time it is likely to make us feel heavy and sleepy, and so we find we can work better if we have three meals a day instead of one large one.

Young animals (puppies, kittens, birds) often need to eat more than three times a day; and very young babies may be fed as often as every three hours during the day, and once or twice at night as well.

Food is necessary for growth. Living things need food for growth. Prove this for yourself by an experiment with mold plants. Get some glasses and small dishes, as shown in the next picture.

Get some mold from a jar of preserves or moldy bread, and three small dishes. In one dish put a piece of dry bread or cracker, and rub some mold on the upper side; in the next dish put some wet bread or cracker and smear mold on it in the same way; put some mold in the third dish without any food or water. Set the dishes in a warm place, cover to prevent drying,

and watch them for a few days to see whether mold can grow without food and without water.

FIG. 75. This is the way the three dishes looked when the experiment was started.

Need for water. Did the molds grow on the dry bread? Can the mold plants use the food in the bread if they haven't water?

We, too, need water for growth. Like the mold plants, we can't use our food materials unless we have plenty of water.

FIG. 76. Which of these three drinks is best for growing children?

Children should drink four or five glasses of water a day, and grown people should have at least eight glasses. That means rather large glasses, which hold half a pint. How many pints should you drink? How many pints should grown people drink each day? Even if you drink milk or other liquids, too, it will not hurt you to drink the full amount of water — at least four glasses each day.

There is no drink so refreshing as plain water. When

we are very warm and thirsty, plain cold water seems to satisfy most people better than any other drink. Even when we have other things to drink, such as ice-cream soda or "soft drinks," we often take a glass of cold water, too, before we feel satisfied.

Some people think alcoholic drinks, such as wine and beer, are more refreshing than any other kind; but

FIG. 77. These cattle on one of the Western ranches are making their daily visit to a water hole or pond. (*Courtesy of American Museum Natural History*)

when men are shipwrecked at sea or lost in the prairies or deserts, the drink they long for is water. When they are awake they thirst for water; when they sleep they dream of cool springs and splashing waterfalls.

Animals like water too. People who study birds will tell you that one of the best places to find birds is along

a brook or stream. Bird baths or basins on lawns attract birds.

In dry regions wild animals sometimes travel long distances to find water. Springs or water holes often have well-marked paths made by animals which go there regularly to drink.

FIG. 78. This cow produced over 25,000 pints of milk in one year. That is enough to feed 35 babies for a whole year, if each drinks a quart a day. (*Courtesy of United States Department of Agriculture*)

Just because certain animals can get along with very little water, people sometimes get the mistaken idea that water isn't good for such animals. Once people thought that about sheep. But experiments showed that, although they could get along without it, because they ate green plants and wet grass, the sheep that had water to drink grew to be larger and stronger than the sheep that were not allowed to have it.

Have you heard people say that rabbits will not live if you give them water? That isn't true either. Do any people you know give water to their rabbits?

How animals drink. Notice the different ways in which animals drink. The horse puts his head down into the water and sucks it up into his mouth and down into his throat, just as you use a soda-water straw. Can you suck water in that way? What other animals drink like horses?

How do cats and dogs drink? How do birds and chickens drink? Do ducks and geese drink in the same way? Every time the chicken takes a mouthful of water, it has to lift its head so that the water can run down its throat.

Drinking slowly. Notice how long it takes a thirsty chicken to get all the water it wants. We can drink so much more rapidly that we should be careful not to swallow cold drinks too fast. Very cold things, like ice water, chill the stomach, and then we may not digest our food so well nor so quickly as we should. Nor is it wise to drink much cold water when we are very warm; sip cold drinks slowly.

Water at meal time. Do not drink when you have food in your mouth. Never wash your food down with water, milk, or other liquids. Wait until the food has been properly chewed and has left the mouth. If bread, crackers, or other dry foods are chewed until they are in very small pieces, well mixed with saliva, you will not feel that you need to wash your food down with water or milk.

This does not mean that we should not drink water at meal times. If we are careful to chew our food thoroughly, drinking water and milk with our meals will do no harm and probably helps digestion.

The food of plants. This photograph of little pea plants shows two plants which are very different in size. A week ago they were both the same size.

Fig. 79. Look at the next picture to see how much alike these pea plants were five days ago.

Each little plant, as you see, has two bags of food material. This food gives it a good start, as the following experiment shows.

From one plant we cut off both bags of food, but we left all the food with the other plant. Which plant in Figure 79 was allowed to keep all its food? Can you tell which one lost its food?

Minerals for plant foods. The corn plants on the next page are growing in water, with different kinds of food material, such as iron and lime, dissolved in it. The first jar has all the mineral foods that corn plants need, and, as you see, the plant is growing very well

FIG. 80. This is the way the two pea plants looked five days ago. The next picture shows you why they grew to be such different looking plants.

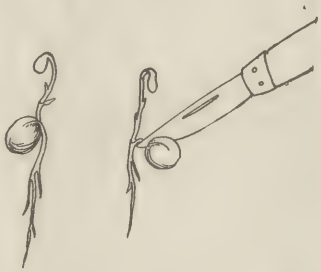


FIG. 81. From one little plant was cut the food which it needed to get its start in life.

indeed. The second jar hasn't any *iron* in it, though it has lime and all the other minerals needed, and this plant is very pale — not healthy and green as it should be. The third jar hasn't any lime, but it has all the other minerals that the first jar has. The plant in this jar has kept green, but it has grown very little indeed, as this picture shows.

Minerals for animal and human foods. Animals need minerals just as much as plants do. We get our lime and iron and sulphur and other minerals from our foods — especially from fruits, vegetables, milk, eggs, fish, and meat.

FIG. 82. Plants, like animals and humans, need mineral foods. The middle plant is not green, because there was no iron in the water in which it is growing. The plant on the left is green, but its growth is poor because it was not given any lime. Lime, iron and all the minerals corn plants need were put into the water for the plant on the right.

Here is a list of foods which have the minerals we need: —

Spinach	Celery
Beans	Cheese
Cauliflower	Fruits
Cabbage	Fish
Lettuce	Asparagus
Eggs	Carrots
Tomatoes	Whole wheat flour
Milk	Potatoes

Most animals are very fond of salt. Cows and horses sometimes eat soil, especially when they have been shut up in the stable for a long time. What do they get from the soil that they like? Sometimes farmers keep a lump of rock salt in each manger, so that the cows and horses can get salt whenever they want it.

Food variety. Deer often come at night to gardens near the forest where they live and eat vegetables, especially cabbages, carrots, lettuce, beets, peas, and even strawberry plants.

Do you like as many kinds of vegetables as deer do? Woodchucks, wild rabbits, and prairie dogs eat even more kinds of plants than deer. What kinds do you like that are not on the deer's list?

See if you can add a new vegetable to your list every year. Watch the markets and look over the seed catalogues; and when you see a vegetable that your mother doesn't serve on the table, ask about it, because it might be a good one to learn to eat.

Often animals that we keep as pets, or to work for us, are given too much of one or two kinds of food. Animals as well as people like a change. Farmers sometimes wonder why a cow will chew bushes and tips of tree branches when there is plenty of grass in the pasture. Can you tell them why?

Animals feeding in an ordinary field or pasture eat a good many different kinds of plants besides grass — sometimes as many as twenty or thirty kinds. Have you noticed any wild plants that horses, cows, and sheep do not eat?

Those who train dogs, horses, etc. to do tricks reward them by giving them a special food, like apple or sugar. Have you ever noticed how fond cats are of catnip? Does your canary like chickweed? Cats and dogs often like surprising things, such as cantaloupe, corn, and chocolate. What unusual things do your pets like?

Food for growth. Here are two chickens which were of the same size and weight when they were three

FIG. 83. These chickens were the same age and size when they were a few days old. After that, the one on the left was given skim milk and grain, while the right-hand one was given whole milk and grain. This shows that cream has in it something which helps growth. (*Courtesy of Professor J. G. Halpin, University of Wisconsin*)

days old. Then they were fed different kinds of food for fifteen days. Which chicken had the best food for growth?

Children who are growing very fast, getting larger all the time, making more bone, more skin, and more

muscle, need plenty of good food for growth. Children need more food in proportion to their size than grown people, for they have to have food for growth as well as for repair and work and heat. Young birds are very interesting examples of animals that use a large amount of food and grow very rapidly.

Scrape your elbow or your knee with your finger nail, and see if you can scrape off some of the old dry skin scales. All over the body the skin is wearing off in this same way, but it is more easily noticed on the knees and elbows. As the outside skin wears off, new skin is formed underneath.

Not only our skin, but many other parts of our bodies, are constantly wearing out, just as every part of an engine is constantly wearing out when it runs. The food we eat gives us the material to repair or build up all parts of the body as they wear out.

Food for work. Our food gives us strength to do our work. When we work hard we need more food. We feel hungrier, and that makes us eat more. What are the kinds of work or exercise that give you a good appetite? Why do we say "eats like a woodchopper"?

On what day of the week do we do the least work or take the least exercise? It is Sunday in most homes. Yet on that day many people have heavier dinners and eat more than on the days when they work hard.

Some people eat only two meals on Sundays. Why is that a good plan for people who do not exercise on Sundays and holidays? Do careful farmers give their horses full meals on days when they do not work?

Here are two lists: (1) foods which are very good for growth; (2) foods especially good for heat and work.

Growth	Heat and Work
Beans	Beans
Peas	Peas
Carrots	Cornstarch
Milk	Butter
Eggs	Sugar
Fish	Ice cream
Chicken	Cereal
Beef	Salad oil
Cheese	Bacon
Whole wheat bread	White bread
Lamb	Potatoes

Pick out of the first column things we often eat for dinner that are good for growth. Are there any foods for breakfast in the growth list? Find three of them in the heat and work column. Are there any dinner foods in the heat and work list?

Food for a day. Here is the food eaten by a boy of ten in one day:

Breakfast	Lunch	Dinner
Orange	Hot biscuit	Brown bread
Oatmeal	Butter	Butter
Sugar	Creamed potatoes	Bean soup
Egg	Spinach	Codfish
Milk	Gingerbread	Peas and carrots
Toast and butter	Apple sauce	Milk
	Cocoa	Potatoes
	Sugar	Ice cream

Did this boy eat one growth food each meal? Name one heat and work food that he ate each time.

Milk as food. Milk has a great many kinds of food in it. Cow's milk is nearly a perfect food for babies and for little animals. Even grown people can live on it for weeks at a time. But it doesn't have

FIG. 84. Little bears do not need to read a book in order to learn that milk is the best food for growth. (*Photograph by William L. and Irene Finley. Courtesy of Nature Magazine, Washington, D. C.*)

enough of all the kinds of food we need, and usually even little babies do better when they have some food besides the milk, such as prune juice or orange juice.

Eating too much. If we eat more food than our bodies need, it may make us too fat and heavy. Too

much food makes too much work for the body, for it tries to digest all that is eaten. Sometimes the stomach gives up trying, and then it may vomit the food; or we may have severe pain or restless nights and bad dreams, to warn us that something is wrong.

"Eat to live but do not live to eat" is an old proverb that most of you have heard. Our food nowadays is cooked in so many attractive ways that we are often tempted to eat more than we should. Benjamin Franklin once said that we eat twice as much as men used to eat before they knew so many tempting ways of cooking foods.

Here are three sentences from *Poor Richard's Almanac*, which Franklin wrote in 1742, showing what he thought about how much food we should eat:

1. Excess in all things whatever, as well as in meat and drink, is to be avoided.

2. Would'st thou enjoy a long life, a healthy body, and a vigorous mind, and be acquainted also with the wonderful works of God, labor in the first place to bring thy appetite to reason.

3. Youth, age, and sick require a different quantity.

It is very hard to say just how much children of your age should eat, for you are of different sizes and weights, and take very different kinds of exercise. If you are very much underweight or overweight, you are probably not eating the right kinds and amounts of food. If you feel heavy or lazy after meals, you are eating too much at one time.

Do you remember the story of Kaa, the snake, in *The Jungle Book?* Snakes and tigers sleep and sleep after they have eaten heavily, but we who eat several

FIG. 85. A number of New York City children were so thin that several nurses were asked to take groups of five and help them get strong and well during the summer. This picture shows one of the groups that made the greatest improvement. (*Courtesy of Henry Street Settlement*)

regular meals a day should not feel that way. However, doctors tell us that we should not work or play hard just after a meal.

Little children and other people who do not get

AGE–HEIGHT–WEIGHT TABLES *

Girls							Boys						
Height Inches	8 Yrs.	9 Yrs.	10 Yrs.	11 Yrs.	12 Yrs.	13 Yrs.	Height Inches	8 Yrs.	9 Yrs.	10 Yrs.	11 Yrs.	12 Yrs.	13 Yrs.
38							38						
39							39						
40							40						
41							41						
42							42	39					
43	41						43	41					
44	42						44	44					
45	45	45					45	46	46				
46	48	48					46	48	48				
47	50	50	50				47	50	50	50			
48	52	52	53	53			48	53	53	53			
49	55	55	56	56			49	55	55	55	55		
50	57	58	59	61	62		50	58	58	58	58	58	
51	60	61	61	63	65		51	61	61	61	61	61	
52	64	64	64	65	67		52	64	64	64	64	64	64
53	67	67	68	68	69	71	53	67	67	67	67	68	68
54	69	70	70	71	71	73	54	70	70	70	70	71	71
55	72	74	74	74	75	77	55	72	72	73	73	74	74
56	....	76	78	78	79	81	56	75	76	77	77	77	78
57	....	80	82	82	82	84	57	....	79	80	81	81	82
58	....	....	84	86	86	88	58	....	83	84	84	85	85
59	....	....	87	90	90	92	59	....	....	87	88	89	89
60	....	....	91	95	95	97	60	....	....	91	92	92	93
61	....	....	....	99	100	101	61	....	....	....	95	96	97
62	....	....	....	104	105	106	62	....	....	....	100	101	102
63	....	....	....	....	110	110	63	....	....	....	105	106	107
64	....	....	....	....	114	115	64	....	....	....	....	109	111
65	....	....	....	....	118	120	65	....	....	....	....	114	117
66	....	....	....	....	....	124	66	....	....	....	....	....	119
67	....	....	....	....	....	128	67	....	....	....	....	....	124

FIG. 86. To find the average weight of most boys and girls of your age and height read down from your age and across from your height until your two reading paths meet. A boy of 8 years old and 50 inches high *usually* weighs about 58 pounds. Find as directed, 58 in the Table. What would you expect a boy 8 years old and 51 inches high to weigh?

* The above parts of revised tables prepared by Dr. Thomas D. Wood and Dr. Bird T. Baldwin are included through the courtesy of the American Child Health Association. The complete tables may be obtained from the Association, 370 Seventh Avenue, New York City.

Age is taken at the nearest birthday, height at the nearest inch, and weight at the nearest pound. In taking the height or weight remove outdoor clothing, shoes and coat.

Thousands of boys and girls were measured to get these average weights; but healthy children may be several pounds heavier or lighter, especially if they are of very slender or very stout build.

enough sleep at night often find the easiest time to take a nap is soon after the noontime meal. Why is this so?

Sweet foods. Foods which taste sweet contain some kind of sugar. What kinds of sugar do you know? The kind usually sold in stores is made from sugar beets or sugar cane. Such sweet fruits as grapes, cherries, peaches, and plums or prunes contain a kind of sugar known as fruit sugar. Although milk is not very sweet, there is in it a sugar called milk sugar. This is often added to cow's milk when it is modified for feeding babies. Name one very sweet food that we get from animals. Sugar is a food; but our bodies cannot take care of a great deal of candy or other things made largely of sugar. If we eat too much sugar, we may have trouble in digesting our food. Sometimes too much sugar makes people ill.

FIG. 87. A carpenter's square is better than a ruler for measuring height.

The best plan is to eat sweet foods at the end of the meal. You are not likely to eat so much then as between meals. Besides, sweets spoil the appetite for other foods; that is one reason why we should not eat candy and other sweets just before meals.

Fruits contain sugar as well as minerals. Eating fruits is a very good way of getting our sugar, because

most people are not so likely to eat too much fruit as they are to eat too much candy and other sweet food.

Getting too hungry. It is not good for us to get too hungry. Little children have very small stomachs — a baby's stomach is only about as large as a teacup — and they cannot take enough food to last many hours. Sometimes babies are cross just because they are hungry. A glass of milk, some graham crackers, and fruit, between meals, will keep little children from becoming too hungry. It is often good for you to eat a small sandwich or something of that kind at recess time, or when you come home from school.

Of course eating between meals is not a good thing to do if it spoils your appetite for the next meal. If people do it only when they are really hungry, because they have been doing unusually hard work, or because the meals are farther apart than usual, it will not spoil the next meal. Do ice cream, "pop," or "sodas" ever spoil your appetite?

Some mothers make it a rule to give the children food between meals only when they are hungry enough to eat bread and butter, or plain crackers and milk. Why is that a good rule? A little ripe fruit may be eaten too, such as an orange, an apple, a pear, or a small banana.

Another food rule is not to eat just before a meal, because to do so is quite sure to spoil the appetite and make you eat less of the nourishing food you need.

Be careful where you eat. Many people eat too much, especially on picnics or outings. As soon as

FOOD FOR RIGHT LIVING

You cannot have good health without good food properly prepared.

Food must do three important things:

1. Furnish building material for the growth of the body.
2. Supply the fuel which the body needs to do its work.
3. Rebuild the worn-out tissues, muscles, nerves, etc. so that the body may thrive

WHAT TO EAT

Well cooked cereals
Vegetables and fruits
Whole wheat, brown and corn bread
Meat - not more than once a day
Milk, butter, eggs, cheese
Fish - when absolutely fresh
Hard foods which compel thorough chewing - crusts, fruits, nuts
Milk and cocoa are nourishing foods as well as beverages

WHAT TO AVOID

Over eating
Eating too fast
Eating when very tired or excited
Too much meat and eggs
Unripe Fruit
Fried foods - hard to digest
"Sharp" relishes - often harmful
Alcoholic drinks - always harmful
Tea and coffee - especially bad for children

DRINK

Several glasses of water daily. Sipping is safer and healthier than gulping. Very hot and ice cold drinks are often harmful.

RULES TO OBSERVE

Seek variety in your food.
Chew thoroughly everything you eat.
Don't rely on drugs to aid digestion.
Avoid unpleasant talk during meals.

Committee on Health Problems
National Council of Education

FIG. 88. On which of these rules do you need to work hardest? (*Courtesy of Dr. Thomas D. Wood and the American Medical Association*)

some people start out for a trip they begin to eat and drink. At the first slot machine they buy candy or chewing gum, and every time they change cars or trolleys, they look around for "hot dogs" or ice cream cones or soft drinks.

People often eat in places where the dishes aren't properly washed. Watch, the next time you are traveling or shopping, and see how many people buy food at places where there isn't hot water to wash hands and dishes properly.

There isn't any good reason for eating between meals while we are traveling. People eat then just because they haven't anything else to do, and they don't stop to think whether the food is safe and clean, or whether their own hands are clean enough to handle it. They eat because they haven't enough self-control to refuse food when they see it on the street carts and counters. Have you?

Care in handling milk. Milk is one of the foods that we must be careful about. It is the main food for little children, and it spoils or sours very quickly if it is not kept cool. Keep the milk in the coolest part of the cellar or ice box — on the cellar floor, or next to the ice.

Wash the bottles thoroughly before opening them, especially around the top. After taking out the milk you need, cover the bottle with a fresh clean cover (a little cup or a jelly glass cover will do very well), and put the rest of the milk back next to the ice.

If there are any flies around, be very sure to keep the milk covered while it is out in the room. Many

people are very careless about protecting the milk bottles and cream pitchers against dust and flies.

Farmers have to be very careful how they milk the cows, and how they care for the milk cans and pails. It is very hard to keep all the bad germs out of milk. Cows are often very dirty, and the dust in the air of the barn is full of germs that we don't want in our food.

Often cows, and the people who milk the cows or handle the milk, have diseases; and so in some places the law says that all milk must be heated to kill disease germs, unless the health officers know that the milk comes from cows that haven't tuberculosis, and is handled in a very careful and clean way.

Turn to the chapter on Enemies Too Small to See, and read about heating milk to make it safe. It may be safe without being heated, but heating it makes us sure it will not cause disease.

Safe water. Sometimes even water that looks clean and pure may have in it the germs of diseases like typhoid fever. In the spring of 1924 over sixty boys and girls caught typhoid fever by drinking the water from a brook in a park near New York City. If you are not sure that the water you are drinking is pure, safe water, boil it before you drink it. On hikes and picnics, you cannot always be sure about the water in springs and brooks; and then it is much safer to boil the water before you drink it or use it for washing your hands or foods that you eat raw, such as lettuce.

Drinking cups. If at any time there aren't enough cups for each person to have one of his own, make one

for yourself out of a piece of paper. Any clean paper will do, even a page out of the back of a magazine.

An easy way to make a drinking cup is to roll the piece of paper like this, and then turn up the bottom. You will have to hold it carefully, putting your hand around it, but you can get a very good drink with this kind of cup.

How teeth help digestion. To make proper use of our food we must have good teeth. Watch a cow

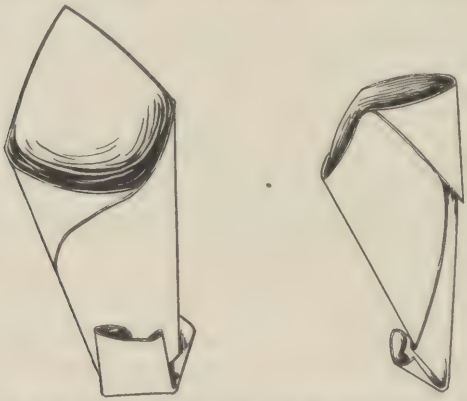


FIG. 89. Roll a sheet of paper and bend the bottom up to make a cup like the one on the left. Then bend the top over as shown on the right. Practice until you can make one that does not leak, when you keep your hand around the bottom part.

chewing her cud. As she grinds her food between her back teeth the lower jaw moves from side to side. With what teeth do we chew things that need to be chewed a long time? Which are our grinding teeth? our cutting teeth?

Lions, cats, dogs, and other animals that eat flesh

need another kind of teeth, pointed, sharp ones, to sink into the flesh and tear it apart. Our teeth that take the place of the dog's tearing teeth are not so long and so sharp-pointed as the tearing teeth of such animals, but we still call them "canine" or "dog teeth." We use them as much for cutting as anything else. Look

FIG. 90. Examine your teeth with the aid of a small mirror and find your cutting teeth, your tearing teeth, and your grinding teeth. Are your tearing teeth like the dog's?

in a mirror and, counting from the middle, see if the third tooth on each side looks at all like the dog's tearing teeth. Some people have very pointed "dog teeth."

Most of us chew our food too little. Chew a piece of bread or plain soda cracker, and notice how much sweeter it becomes as you chew it. If we do not take proper care of our teeth, will they cut and grind our food properly? Can you give one reason why indigestion is often due to poor teeth?

FIG. 91. Why do we call the toothbrush the first line of defense? What is the enemy? If the toothbrush fails to keep the enemy away, where can you go for help? (*After Health News*)

In September, 1924, this clipping was taken from a New York City newspaper:

> **$100 Prize for Pupil With Best Teeth To Be Awarded Tuesday**
>
> The boy or girl in the public schools of this city who has the best set of teeth will be presented with $100 next Tuesday at the conclusion of the contest conducted by the United Neighborhood Houses. The contest so far has shown that Italian children have the best teeth, with boys and girls running neck and neck for first honors. A surprising knowledge of dental hygiene was shown by the children, the contest conductors announced.

What are the things we should know about caring for our teeth? There are three at least: (1) keep your teeth clean as directed on page 110; (2) go to a dentist at

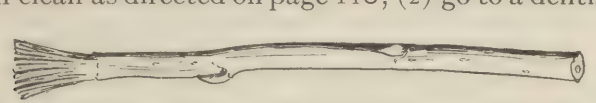


FIG. 92. Soft twigs like willow make very good toothbrushes. Hammer the end of a small twig like this until you get bristles at the end. You can afford to use a fresh toothbrush of this kind every time.

least twice a year to see if your teeth need his help; (3) have every cavity filled promptly, even in the first set of teeth, because if they are lost too soon the second teeth will not be so good as they would be otherwise.

Cheerfulness helps digestion. Getting overtired or angry may keep us from digesting our food properly, or make us feel like not eating at all, and that is bad for our health.

We can't always prevent getting tired, or angry, or

sad, but we should try to think of pleasant things at meal times, at least. We get more good from a cheerful meal than from a sad one. There is an old saying, "Eat, drink, and be merry." Change it to, "Be merry when you eat and drink."

When people are overtired or ill, they should eat little food, and food which is easily digested.

Everybody should have one or two bowel movements daily. It is not wise to eat heavily when the bowels

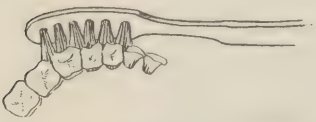


FIG. 93. Is your toothbrush small enough to get around and behind your back teeth? Are the bristles uneven enough to clean between your teeth?

FIG. 94. Why would this brush dry more quickly than the ones in Fig. 95?

are not working properly. There are medicines, called laxatives, that may be used in such cases; but it is much better to cure yourself by better eating habits, such as eating whole wheat or graham bread instead of white, and plenty of coarse cereals, fruits, and vegetables. Regular exercise, especially in the open air, is also very helpful. If laxatives are often necessary, a doctor should advise you, because it is easy to form a habit of depending upon such medicines.

All wastes from the body should be removed regularly. Regular habits of this kind formed now will do much to improve your health, while carelessness may affect your whole life.

Table manners. Did you ever think how much difference good table manners make?

They say that only humans drink without putting the mouth into the water — by merely putting the lips to the edge of the glass. That's a much daintier way of drinking, isn't it? Did you ever see any one who drank almost like a cow or a horse?

Is it polite to put a spoon which has been in your own mouth into the sugar bowl, or a knife which you

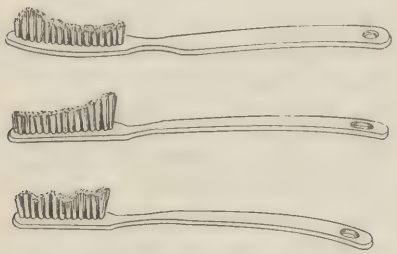


FIG. 95. If your toothbrush is not uneven like one of these, you can cut it with scissors to make one of the shapes.

have been using into the butter dish? A person should use a toothpick only when he is alone, and not in the presence of others.

No one likes to have others think he is a piggish animal. Yet persons who are too polite to take the largest pieces of cake sometimes eat in so rude a manner that every one around them is disgusted. People who gulp their food, or smack their lips, or chew with their lips open may "take away the appetite" of people near them. That isn't a fair thing to do; everybody should cultivate good table manners.

HEALTH TABLE

Here are 19 things to do which will give 30 Credits. Since you may not be able to earn the whole number every day, let us call 25 a perfect score; how near 25 can you earn daily through a whole month?

Number	Things to do every day	Credits
1	Eat fruit at least once	I
2	Eat two vegetables	I I
3	Eat fish or eggs instead of meat	I
4	Eat no candy between meals	I
5	Drink 4 glasses of water	I I I I
6	Drink 4 glasses of milk	I I I I
7	Do not drink tea or coffee	I
8	Sleep with your window open	I
9	Sleep at least 10 hours	I
10	Sleep 11 hours or more	I
11	Clean your teeth on rising	I
12	Clean your teeth at bedtime	I
13	Clean your teeth after meals	I I I
14	Have clean hands and face at meals	I I I
15	Have clean hands and face in school	I
16	Take a full bath, if possible	I
17	Have at least one bowel movement	I
18	Play or work one hour out of doors	I
19	Help make meal time pleasant	I
	Total credits	30

Give yourself a mark for each credit in the middle column on the opposite page. If there are more than 25 any day, write down 25 and call the rest "good measure."

HEALTH SCORE CARD

of _____ *in* _____ *School*

Grade _____ *Year* _____

Day	For month of _____	Total Credits
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
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19		
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21		
22		
23		
24		
25		
26		
27		
28		
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30		
31		

THINGS TO ASK, ANSWER, TELL, OR DO

1. Why is it better to eat three meals a day than only one?
2. Name two things necessary for growth.
3. Give two rules to follow in drinking cold water.
4. Why should you not drink when you have food in your mouth?
5. What are two important minerals found in plant foods?
6. Why should you eat vegetables and fruits?
7. What two things does the food we eat do for the body?
8. Why is milk nearly a perfect food for babies?
9. Name three ways in which overeating may harm us.
10. How can you tell whether you are eating too much?
11. Why should we not work or play hard just after a meal?
12. Give two reasons why sweet foods should be eaten at the end of the meal instead of between meals.
13. Is it ever wise to eat between meals? If so, when?
14. What are some of the mistakes which are made in eating at picnics and outings?
15. Find and read three rules to follow in the care of milk.
16. How can milk be made safe from disease germs?
17. What disease may come from drinking impure water?
18. What would you do if the only drinking water which you could get was not safe to drink?
19. Why should each person have his own drinking cup?
20. What should you do to keep your teeth in good condition?
21. Why is it necessary to have good teeth?
22. Find and learn a motto to remember when you eat.
23. How can you usually get your bowels to work properly without the use of medicines?
24. Read the paragraph on forming regular habits.
25. Make a list of "don'ts" found under "Table Manners." Add as many more to the list as you can.
26. Why should you cultivate good table manners?

FIG. 96. An outdoor school is possible in many places — at least part of the year. This one in Woolwich, England, accepts only pupils sent by the school physicians. We need such schools to keep children healthy as well as to cure those who are ill. (*Courtesy of Mr. H. Broughton*)

CHAPTER V

AIR AND HEALTH

Air needed in the body. Would you guess that every twenty-four hours a grown person breathes in and out of his lungs over seventy barrels of air?

It doesn't seem possible, does it? That is because we take in very little each time: grown people, half a quart or a little more in each breath, and children, of course, much less, — about one-quarter to one-third of a quart for boys and girls eight to ten years old.

But we take in a great deal of air in a whole day because we breathe so often.

How often do we breathe? Use a watch that has a second hand, and count how many times you breathe in one minute. Is the rate the same for every child in your class? To find out, have some one give signals so that you can all tell just when a minute begins and

20 times a minute
60 (minutes in an hour)
1200 times an hour
24 (hours in a day)
4800
2400
28,800 times a day.

FIG. 97. If, each time this boy breathed, he took in one-fourth of a quart of air, how many quarts would he take into his lungs in a day?

ends, and see how often children of your age do breathe in a minute.

A boy ten years old found that he breathed about 20 times a minute. Every hour has 60 minutes, so it would be 60 times as often for an hour. In an hour he breathed 60 times 20 or 1200 times. In 24 hours, or one day, he would breathe 24 times as often, of course. That makes 24 times 1200, or 28,800 times a day. In this same way work out how many times you breathe in a day.

Look back to the first page of this chapter and see how much air you take in each time you breathe. Counting 4 quarts to a gallon and 50 gallons to a

barrel, work out, as in the example in Figure 97, how many barrels of air you breathe in a day.

Babies breathe faster than older children. Ask several children in your class who have babies at home, less than one year old, to see if they can count how fast a baby breathes. Have others try to find out how fast

FIG. 98. In this outdoor school in London, England, the boys are building their own schoolhouse. The pupils were sent to this school because their health was poor and they needed outdoor life and fresh air. (*Courtesy of Mr. H. Broughton*)

children between two and four breathe. Do older people breathe faster or more slowly than you do? Do you breathe faster than your mother and father?

Exercise and breathing. How much difference does exercise make in the rate at which you breathe? Take your breathing rate after you have been sitting quietly for ten or fifteen minutes; then run or skip rope or hop

up and down for five minutes, and take your breathing rate again. Why do we need to breathe faster when we exercise? Any part of our body which is working needs more air than when at rest.

Why we need air. Why do we need to take in air all the time? It is because we need the oxygen that the air contains. About one-fifth of the air is oxygen — a colorless gas which we cannot see.

We cannot live without this oxygen because our muscles and all other living parts of the body are using oxygen all the time. We take it into the lungs with the air we breathe. There in the lungs the oxygen goes into the blood.

The blood with its oxygen goes from the lungs to the heart, which pumps it to every part of the body. This happens in a very short time; for example, it takes only about twenty to twenty-five seconds for blood to get from your heart to your fingers or toes. From all parts of the body blood comes back to the lungs for more oxygen, and then the heart again pumps it throughout the body.

The air we breathe out. When the blood comes back to the lungs, it has still some of the oxygen left; it doesn't lose all of it as it travels around the body. By the time it gets back to the lungs it has another gas that it must get rid of. This gas is called carbon dioxide. It passes from the blood into the air in the lungs, and is then breathed out into the air around us.

Carbon dioxide makes limewater milky. To prove to yourself that the air coming out of your lungs does

contain carbon dioxide, breathe through a straw or a glass tube into a glass of limewater, and see how milky the limewater becomes.

The air around us always has some carbon dioxide in it. Set a glass of limewater on the table or desk for an hour or two to see if it becomes milky.

FIG. 99. These two glasses are filled with limewater. As this little girl blows her breath into one of them the air from her lungs rises in bubbles through the limewater. Why does the limewater in the glass become milky or cloudy?

We don't want to breathe in the same air we breathed out, then, do we? It hasn't so much oxygen as air we haven't breathed. Is it a good thing to sleep with our heads under the covers? Why are mothers so careful to see that the baby's face isn't covered by the blankets?

Breathe on a clean piece of glass. Why does the glass become cloudy? Does the air you breathe out

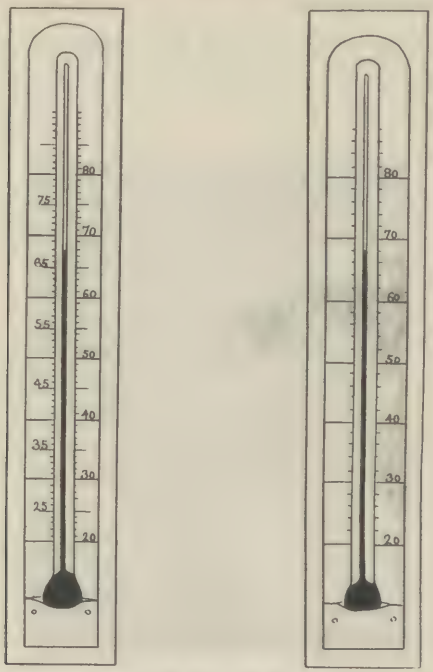

FIG. 100. How many counts or degrees for each space in the left thermometer? in the one on the right? Which is like your school thermometer? Is the temperature reading of these thermometers suitable temperature for schoolrooms?

contain more or less water than the air you breathed in? Where does the water or moisture come from?

On very cold days you can see the water in your breath without breathing against glass. When the air is cold it turns the water vapor in your breath to tiny drops of water, large enough to be seen.

Water, then, is a second thing that the air in our lungs removes from our body. The first one was carbon dioxide. There is still a third thing, and that is heat.

You all know that the air which leaves the lungs carries heat out with it, because you breathe on your fingers on a cold day to make them warm. Did you ever breathe on a cold, frosty window pane to melt the frost or ice, so you could see out of the window?

There is another way of showing that air leaving the lungs carries out heat. What is the temperature of the schoolroom? What is the temperature of the air you are breathing in? Hold a thermometer close to your mouth and breathe gently upon it. How many degrees can you make the mercury rise? Where did the heat come from?

Write on the blackboard the three things that are in the air we breathe out. Give them all in one sentence like the following (the dashes will tell you how many letters belong in each word):

The air coming from our lungs carries out
------, ---- and ------ -------

Keeping dust out of the lungs. Sometimes the air holds dust or smoke that we ought not to take into our lungs. How do we keep them from going into the lungs?

Hold a hand mirror so that you can see the tiny hairs in your nose. These little hairs help to catch the small particles of dust. After you finish sweeping, or

dusting, or raking the stove, or sifting the ashes, or walking through a cloud of dust, you may notice that a great deal of dust has collected in your nose. If you breathe properly — with your mouth closed — most of the dust will stay in the nose and you can get rid of it by using your handkerchief.

Keep your mouth closed if you have to go through dust and smoke in railroad tunnels, or dusty streets or roads. Firemen and other people often have to stay in smoky, bad air for a long time. They often wear masks, like the gas masks soldiers used in the war, to keep out things that would injure the lungs. If you are ever caught in a smoky building, tie a wet handkerchief around your mouth and nose. That will help a little; perhaps just enough to save your life.

Aids in breathing. All the muscles in the walls of our chests — even the little short muscles between the ribs — must be in good condition to make sure we keep plenty of fresh air in our lungs. Exercises like singing or whistling develop our chest muscles because they make us take in larger amounts of air. Blowing soap bubbles is also a good lung exercise. Notice how you draw in all the air your lungs can hold when you try to blow a very large soap bubble.

Keeping good sitting and standing positions — with the chest up — are good chest exercises too. Take in a long breath and see if you can feel your ribs lift as the muscles between them tighten.

Some people can hold very large amounts of air in their lungs. If you fell into deep water, how would

it help you if you could hold your breath for a long time? Why must water be kept out of the lungs? Swimmers, while diving, have to hold their breath as long as they are under water.

How long can you hold your breath? It is hard to be very sure, because sometimes you let a little air in

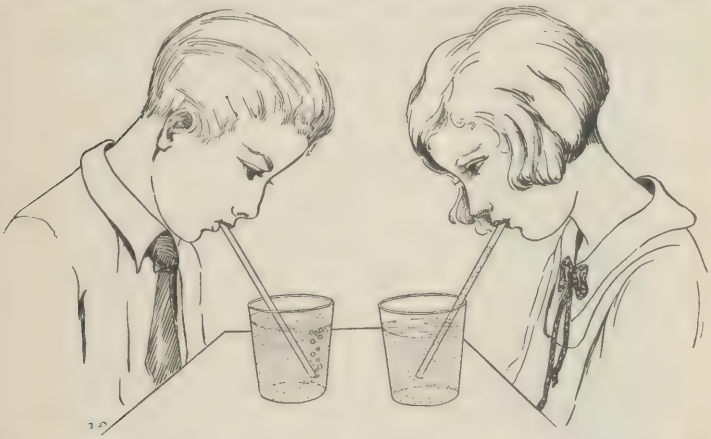

FIG. 101. Is the boy in this picture allowing any air to escape from his lungs? Has the girl drawn any air into her lungs since she put the tube into her mouth?

and out without knowing it. One way to be sure is to hold a straw or a glass tube in the mouth, keeping the other end in a glass of water. Look at the boy in the picture to see if he is letting any air out. Will the water keep rising in the tube unless the girl draws air into her lungs?

Of course it is possible to be foolish about such things, to draw the air in so fast or hold it so long that it is not good for our lungs. Do you remember

Æsop's fable of the frog that puffed himself out until he burst? That's only a tale, of course, but we ought never to strain any part of our bodies. It would be good practice to see how long you can hold your breath easily, but never hold it until you get red in the face or until it makes you feel uncomfortable.

Doctors often take our chest measure to see how much lung space we have, and whether our lungs are

Fig. 102. Hold a rubber raincoat between yourself and a warm stove or radiator. Does heat get through it very easily. Why do rubber raincoats make the body feel warmer?

in good condition. They do it by measuring our chests when we have let out all the air that we can, and again when we have taken in as much air as we can take in comfortably.

Has the school doctor or the school nurse measured your chest expansion? Do you need to increase it? If so, remember that good outdoor games, such as ball and tennis and swimming, are better for us than any indoor exercises, for improving the condition of the lungs as well as the muscles.

The skin needs fresh air. Another reason why we need plenty of fresh, moving air is that too much heat and moisture in the air affect the skin and make us feel uncomfortable. This is described in Chapter VI, but there is one experiment we can do now to show that the skin needs fresh air.

Button a raincoat or rubber cape around one of the pupils in your class, as shown in Figure 102. Have him stand or sit quietly while the class goes on with its regular work, and in a short time (ten minutes or less) he will find that he has become quite uncomfortable because his body has become very warm and very moist or sweaty. Where did the heat come from? What makes his skin feel so moist? Why does he feel more comfortable when the teacher removes the raincoat, so that the air from the room gets to his body?

If the body is giving out heat and moisture all the time, why didn't he notice it before putting on the raincoat? Why does fanning make us more comfortable? Why do we need to have the air in our houses changed?

There is a stale odor that comes from soiled or sweaty clothing, or from the cooking or washing done in the house, which is very unpleasant. That is another reason why we need good ventilation in our rooms.

Ventilating our homes. When we play and work outdoors, we never have to think much about the kind of air. But indoors, especially in cold weather, when we are trying to keep the house warm, we must be sure to let in plenty of fresh air.

It is best to have the room air changing all the time — but not so fast that it makes drafts that will chill us. Usually, in our homes, the air that has been longest in the room is also the warmest, and since warm air is lighter than cold air, we find the warmest

Fig. 103. Where is the warmed air leaving this wigwam? Where is the cold air entering?

air in the upper part of the room — near the tops of the windows and the ceiling.

If you open one window at the top and another at the bottom, where would the warm air go out? Where would the cold air come in? To be sure that you answer these questions correctly, hold a smoking joss stick or a lighted candle near each opening to find out which way the air is moving.

In an Indian wigwam the warm air and smoke go

out through the opening at the top of the wigwam, and the fresh cold air comes in at the doorway or around the bottom of the tent. The arrows in Figure 103 show this.

Imagine that the lamp chimney shown in Figure 104 is a glass wigwam. In it place a smoking joss stick to help us see which way the air is moving. Is any

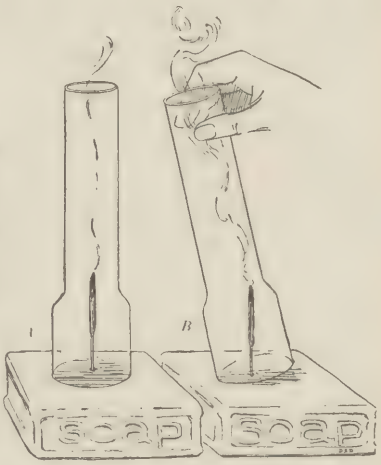

FIG. 104. Why does lifting the chimney make the joss stick burn better? Would a fire burn well in a wigwam if the wigwam could be tightly closed at the bottom?

air coming out at the top? Lift the chimney as in Figure 104 (*B*) to let air go in at the bottom as it does in the wigwam picture. Do the air and smoke come out more rapidly with two openings or with one?

Are two openings better than one if we want to change the air of a room thoroughly and quickly? Will you have better air at night if you open two windows instead of one?

Even when we don't open the windows, a little fresh air gets in through the cracks around the doors and

FIG. 105. Notice where the cold air is coming into the room, while the warmed air goes out. How does the fire get enough air to help it burn?

FIG. 106. Look back at Fig. 105. Then look at this figure to see how opening the window affects the air changes in the room.

windows. We often notice this on cold, windy days. Opening the doors as we go in and out also lets in fresh outdoor air.

But too little gets into the room in these ways; so we often keep the windows open a little way, and once in a while we open them wide to change the air and be sure that we have plenty of fresh outdoor air. You can prove how much more rapidly opening the windows changes the air the next time it is necessary to let smoke out of the kitchen.

We can take cold even in the house, especially in winter, if we are in a strong draft. When there is too much draft, turn your bed so that the draft doesn't blow on your head, or hang a blanket over the head of your bed.

We are not likely to take cold when we sleep out in the open air, in a tent or a sleeping porch or under a sleeping hood at a window, if we keep well covered. We must always have enough bedclothes to keep from becoming chilled.

THINGS TO ASK, ANSWER, TELL, OR DO

1. How can you prove that the air you breathe *out* contains each of the following: carbon dioxide gas, moisture, and heat?
2. What is there in the air we breathe *in*, which is necessary to the body?
3. Which should you do — breathe through the mouth or the nose? Why?
4. Name several exercises which develop the chest muscles.
5. Why should we have strong breathing muscles?
6. Name several games which develop deep breathing.

7. What reason is there for wanting fresh air besides needing it for breathing?

8. Tell how you could ventilate this room.

9. What must we avoid in ventilating, and why?

10. What care should we take when we sleep out in the open air or in tents?

CHAPTER VI

CLOTHING AND THE SKIN

Animals with warm coats. Did you ever wonder why most of the best fur we use for collars, muffs, and coats comes from animals that live in parts of the world where the winters are very cold?

Here is a list of some fur-bearing animals. Look in your geographies and in the encyclopædias, and find out where each of these animals lives. Do they all live in cold regions?

Wolf	Seal
Fox	Squirrel
Marten	Ermine
Lynx	Beaver
Skunk	Muskrat

How many of them spend much of the time in the water? When dogs with coarse, wiry hair swim, they get "wet to the skin," but animals with thick, close fur do not get wet in that way. Their fur is very thick and close, and the water doesn't get through the close fine hairs to the skin. Does the hair of collies, setters, and water spaniels keep their skins dry?

Does the skin of a goose or duck get wet? Go to a farm where there are ducks or geese, or have some one bring a pet one to school. Let it swim for a while in a big pan or tub of water, and then pick it

up gently and stand it on a table or a desk. It will probably shake itself a little and then its body will look perfectly dry, for the oil in its feathers keeps the water from sticking to them. Why do people use the expression "like water off a duck's back"? Press its

FIG. 107. The American bison once roamed the western plains in countless thousands, but the furry coats were in such demand for making "buffalo robes and coats" that only a few small herds are now living wild outside of our National Parks. The picture was taken in the Wichita Game Preserve, Oklahoma. (*Courtesy of United States Biological Survey*)

breast feathers apart gently and notice that its skin is perfectly dry and warm. Why does the duck feel warm even when it has been in cold water? Why do so many water animals have close, tight fur? Does your head feel colder when your scalp is dry or when

it is wet after washing your hair? Why should pet dogs be rubbed very dry after washing them?

Air spaces and warmth. Most animals have thicker or longer fur in winter than in summer. Fur and feathers keep animals warm because there are little

FIG. 108. Downy feathers like the bottom ones are best for holding in the heat. (*Photograph by Edith Ricker*)

layers of air between all the hairs and feathers which help keep the heat in.

When it is very cold you may notice that the hair on horses stands out more than usual. That makes room for more air close to the skin, and the horse is kept warmer than if the hair were lying down flat.

Boys who go bareheaded in winter time know that their heads feel warmer if the hair lies loose instead of being brushed down flat. Watch the sparrows on a cold day and see how they fluff out their feathers

to keep themselves warm. Watch a pet canary or a chicken when it goes to sleep; is there any change in the feathers that would help keep it warm during the cool night, when it is not exercising?

Have you ever heard of the Indian hunter who made mittens with the fur inside?

He killed the noble Mudjokivis.
Of the skin he made him mittens,
Made them with the fur side inside,
Made them with the skin side outside.
He, to get the warm side inside,
Put the inside skin side outside;
He, to get the cold side outside,
Put the warm side fur side inside.
That's why he put the fur side inside,
Why he put the skin side outside,
Why he turned them inside outside.

(Author Unknown.)

Even if you put the fur side outside, fur mittens would be warm. Why did the hunter put the fur side inside? Which way would more warm air stay in between the hairs?

Why do people feel warmer with loosely woven or knitted sweaters, underclothes, or socks than with tightly woven or knitted ones?

Did you ever try to keep yourself warmer by putting a newspaper under your coat on a cold windy day? If you find that the coats or wraps you have with you are not warm enough, put a piece of newspaper across your back, under your coat or waist, and

another piece across your chest in the same way. The paper helps to hold in the layer of air already warmed by your body, and so keeps you warm.

If at any time you need more bedclothing, remember that newspapers between the blankets will help keep you warm. A layer of newspapers under the

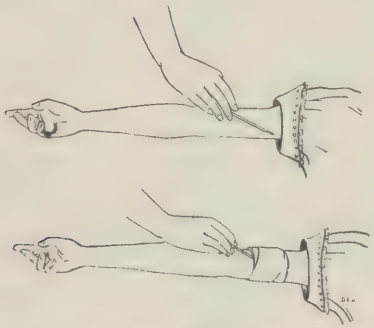

FIG. 109. Which shows the higher temperature, a thermometer lying on your arm, or one which is put under a tight sleeve or a piece of cloth wrapped around your arm? Why does this prove that clothing keeps the body from losing heat as rapidly as it would otherwise?

mattress will help too, especially when the mattress is a thin one.

Let us see if our clothing really holds heat in. Put a thermometer on your arm, as shown in Figure 109, and after five minutes read the thermometer. Then slide it up under your sleeve, or under a bandage, and leave it there for five minutes more before you read it. How much warmer is the thermometer when covered?

Choosing clothing. What kind of clothing holds in the heat best — silk, or wool, or cotton? Get three

small pieces of goods — silk, cotton, and wool — of the same weight or thickness, and lay them on a very warm surface, such as the bottom of a flatiron or the top of a radiator. Then put a finger on each piece, as shown in the picture, and see which kind of material lets most heat pass through it. Which material would keep in most of your body heat? Which would be best to wear in cold weather? Do woolen gloves keep your hands warmer than cotton or silk ones?

FIG. 110. Which material lets the heat from the iron pass through most quickly?

People used to wear much heavier, thicker underwear for winter than they do now. One reason was because buildings were not so well heated as they are nowadays.

Many people now wear thin summer underclothes in cold weather, and when a very cold day comes they put on an extra suit of thin underwear, because two thin suits are warmer than one thick one. Why is this true? Try the same kind of experiment as the last one to find out. Use one thick piece and two thin pieces

of woolen cloth to see which lets through more of the heat of the flatiron or radiator.

In summer time we do not want to hold the heat in, and so we wear fewer layers of clothing than in cold weather. If our dresses or shirts have low necks or

FIG. 111. The baby bison or "buffalo" has on his first coat, but the mother buffalo is shedding her heavy winter coat for a lighter summer one. (*Photograph by Sanborn; courtesy of New York Zoölogical Society*)

short sleeves, the warm air around our body can get out better.

Clothing should suit the weather. Most birds and fur-bearing animals have two coats a year — a heavy one for winter and a lighter one for summer. Human beings have to make more changes than this.

People used to think that we must wear the same kind of clothes every day, as long as winter lasted.

Now we know that we shall not take cold so easily if we put on extra clothes in the very cold weather, or change to lighter clothing on warmer days. But even in very warm weather we should not leave our outer clothing off so long that we begin to feel chilly, and extra clothing should be added to suit the cooler days that often come in summer or in warm climates.

Do you usually need more clothing at noontime or late at night? Early in the morning or at noon?

Clothing and exercise. Why do runners and basket-ball or football players put on a sweater or a blanket when they finish running or playing?

Which way does the body lose its heat more quickly, — through a layer of dry cloth or through a wet cloth? Wet your hand and lay it on the sleeve of your cotton waist or shirt. Where does your skin feel cooler — under the wet part or the dry part of your sleeve?

If you keep on playing or exercising after your feet or clothing become wet are you likely to take cold? What should you do as soon as you stop exercising? Why do many people think that it is not safe to play or work outdoors in the snow or rain?

Getting wet gives us a cold when the body stays chilled too long. Why should we change our wet clothes as soon as possible? If you are caught in a rain storm, keep exercising until you can get a hot drink, a warm bath, and dry clothes. Many people can tramp for hours with wet feet, because walking can keep even wet feet warm, except in very cold weather. Why do people often take cold if they sit

or drive with wet feet? If a boy falls into the water, why might it be better for him to walk than to ride or be carried home?

Woolen and cotton clothing. Many children do not like woolen underwear. It scratches them and makes them feel uncomfortable. Why is it, then, that people think woolen underwear is best for cold weather? Can you give two reasons?

We have just learned one reason in the experiment with cloth on warm iron. Another reason is because

FIG. 112. Lay a wet cotton cloth on one arm and a wet woolen one on the other. Which make the skin feel cooler?

wool threads take care of the body moisture in a better way. Here is an experiment (Figure 112) to show that this is true.

Which material, cotton or wool, gives up water more rapidly? Which is less likely to make our skin feel chilly? When people are climbing or tramping, will woolen or cotton shirts be more likely to take care of the perspiration so as to keep them from becoming chilled? Which will let out the body heat more slowly and keep them from becoming chilled?

The air spaces in woolen goods. The air spaces help keep heat from getting through cloth of any kind. There are more tiny air spaces in wool than in cotton, because the wool threads are *rougher* and do not lie so

close together; this makes many little air spaces in woolen clothes.

Some kinds of clothing have large air spaces too. Knitted mittens and sweaters made of wool have many large air spaces, as well as many tiny air spaces.

Have you ever wondered why loosely knit gloves and sweaters make you so much warmer than tight materials like kid gloves? It is because of the many air

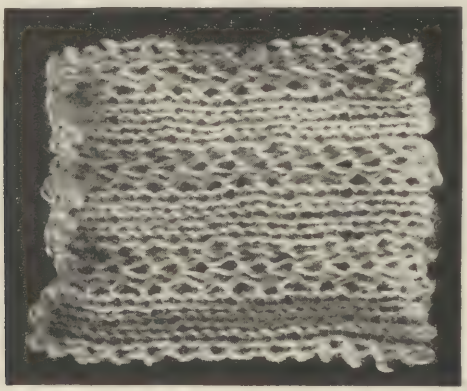

Fig. 113. Notice how many air spaces there are in this piece of wool sweater. Why does a sweater under a coat keep us very warm? (*Photograph by Ellen B. McGowan*)

spaces. Prove this for yourself by the next experiment.

Take a piece of loose woolen cloth and rest one finger lightly against it as it lies on a very warm flatiron or radiator. Then press on it firmly with another finger until you have pressed all the fibers close together and pushed out most of the air. Which time did the cloth keep most of the heat of the iron or radiator from passing through? Why?

Drafts and colds. Sitting in a draft sometimes chills only one part of the body — such as the back, the shoulders, or the neck; and the next day that part may feel stiff or sore. If you ever have to sit in a draft, turn so as to face it, for then you are less likely to take cold.

You can usually avoid becoming overchilled by exercising (swinging your arms, slapping your chest, etc.),

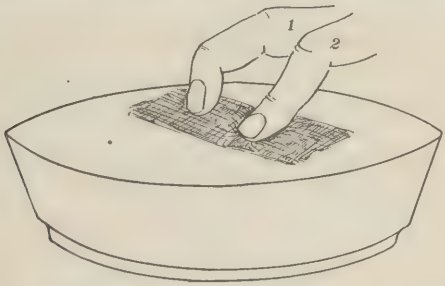

FIG. 114. Which finger is pressing more heavily on the piece of woolen cloth? What does the pressure of the finger do to the air spaces in the cloth? Which finger gets more heat from the iron?

by putting on more clothes, or by drinking something warm — warm milk or cocoa or even plain hot water. What would be the best drink to carry in your canteen or in a thermos bottle when you are "hiking" on chilly days?

The skin regulates heat. Our skin helps to regulate the heat of our body. If we are very warm, more blood comes to the skin so as to get rid of some of its heat. You surely have noticed how red our faces and necks become when we are too warm. That part of the body isn't covered with clothing, and therefore

the skin there can get rid of more heat than on other parts of the body.

When our skin is moist, the water on it changes to water vapor. It takes heat to change water to vapor, and that loss of heat cools the body. All of our skin is constantly being cooled a little by the water it evaporates. Did you ever notice how easily you become chilled when your skin is wet with perspiration?

FIG. 115. Hold a small glass on your cheek and then on your palm to see whether there is any difference in the amount of moisture given out by the skin.

Even when you do not see any perspiration, the skin is giving out water gradually, and so keeping you from becoming overheated as you work and play. You can prove that your skin is giving out water, even when you do not notice it, by holding a small glass close to your skin, as shown in this picture. The palm of the hand is a good place for this experiment, because that part of the body perspires very freely. In a few minutes you will find that the glass becomes

quite moist on the inside. Where does this water come from?

The faster the water evaporates from our skin, the cooler it makes us. Give one reason why fanning makes us feel so much cooler. Why does driving in a motor car make us cooler as in warm weather?

Some animals sweat just as we do. Does the horse? the cow? the dog?

Does the dog have any way of evaporating water to help cool his body? What happens to his wet tongue when he holds his mouth open, panting for breath? Touch the nose of a dog or cat which is in good health. Is it dry or moist? Why does it feel cold to us?

Some liquids evaporate more quickly than water. Is alcohol one of them? Put a drop of alcohol and a drop of water on your hand or on a clean dish and see which evaporates first.

Which cools your skin more? Wet one finger with alcohol and another with water. Then hold them up in the air. Which feels cooler? Why? Would alcohol or water be better to cool your head if you had a headache or a fever? Why are sick people often rubbed with alcohol?

Importance of the skin and clothing. Many people think the skin is important because through it we learn a great deal about the world we live in, by feeling or the sense of touch. But in this chapter we have seen that the skin is very important for another reason: it helps regulate the heat of the body. Clothing is also important because it may help or hinder the skin in this work.

THINGS TO ASK, ANSWER, TELL, OR DO

1. What is the secret of keeping the body warm?

2. Are tightly woven underclothes or loosely woven ones warmer?

3. Why will paper placed between your garments or bedclothes help to keep you warm?

4. Which will keep the body warmest, cotton, silk, or wool?

5. Do you think two thin suits of underclothing are warmer than one thick one? Why?

6. What changes in clothing may be made to suit the weather?

7. How can you avoid taking cold after getting your clothes or feet wet?

8. Give two reasons why woolen cloth is warmer than other cloth.

9. Make up other questions on this chapter and see whether you can answer them without looking at your book. Then ask some one else your questions.

FIG. 116. These little folks are learning early that keeping clean is one sure road to health.

CHAPTER VII

KEEPING CLEAN

Once upon a time there was a little chimney sweep, and his name was Tom. If you do not know about Tom, the chimney sweep, get Charles Kingsley's *Water Babies;* there you will read about a poor little dirty boy who did not know he was dirty, and about his master, who liked to be dirty, and said he would be ashamed to be so dirty that he needed washing every week or so!

There, too, you will learn about the woman who kept Tom's master from beating him just because Tom wanted to wash in the clear, cool water. "Those that

wish to be clean, clean they will be," she said, just as if she knew that Tom was going to turn into a water baby and live in the water, and never have to climb another chimney, scraping his knees and elbows raw and filling his eyes with soot.

Once, when cleaning the chimneys in a large country house, Tom came down the wrong chimney, and out into a room where he saw a washing-stand, with ewers, and basins, and soap, and brushes, and towels, and a large bath full of clean water — what a heap of things all for washing! "She must be a very dirty lady," thought Tom, "by my master's rule, to want as much scrubbing as all that. But she must be very cunning to put the dirt out of the way so well afterward, for I don't see a speck about the room, not even on the very towels."

And then, looking toward the bed, he saw that dirty lady, and held his breath with astonishment. Under the snow-white coverlet, upon the snow-white pillow, lay the most beautiful little girl that Tom had ever seen.

"No. She cannot be dirty. She never could have been dirty," thought Tom to himself. And then he thought, "Are all people like that when they are washed?" And he looked at his own wrist, and tried to rub the soot off, and wondered whether it ever would come off.

Looking round, he suddenly saw, standing close to him, a little ugly, black, ragged figure. He turned on it angrily. What did such a little black ape want in

that sweet young lady's room? And behold, it was himself, reflected in a great mirror the like of which Tom had never seen before.

And then Tom, for the first time in his life, found out that he was dirty; he burst into tears with shame and anger, and turned to sneak up the chimney again and hide; he upset the fender and threw the fire irons down, with a noise as of ten thousand tin kettles tied to ten thousand mad dogs' tails.

Up jumped the little white lady in her bed, and, seeing Tom, screamed with fright; and when the people in the house saw Tom running, they ran after him. And poor little Tom, like a small black gorilla, ran and ran until he found a brook which sang as it ran along:

Clear and cool, clear and cool,
By laughing shallow, and dreaming pool;
Cool and clear, cool and clear,
By shining shingle, and foaming wear;

* * * *

Play by me, bathe in me, mother and child.

* * * *

Strong and free, strong and free,
The flood-gates are open, away to the sea,
Free and strong, free and strong,
Cleansing my streams as I hurry along,

* * * *

Play by me, bathe in me, mother and child.

* * * *

Tom put his hand into the water, and it was so cool, cool, cool, that he said, "I will swim in the water.

I must be clean. I must be clean." And he had not been in the water two minutes before he fell fast asleep; and before he knew what was happening to him, the fairies turned him into a water baby and he swam away where there were no hard masters. And all the things that happened to Tom and the other water babies you must read for yourself in Kingsley's book, because now we are going to find out more about bathing.

Why the skin needs washing. Our skin may be dirty even when it looks clean, because the fine dust in the air settles on it. Here is an experiment to show that dust settles out of the air.

Take a piece of clean glass and rub some salad oil or vaseline over one side of it, so that any dirt that settles there will stick fast. Leave it — the oily side up — on a desk or table until the next lesson, and then hold it to the light to see if it still looks clean.

Our skin is a little moist and oily, too; so dust sticks to it, though not quite so well as to the oily glass. People often wonder how their faces get so dirty. Does the experiment with the oily glass help you to explain this? In places where there are many factories or mines, the air may have a great deal of smoke and soot as well as other kinds of dirty dust in it. Since the skin is oily, warm water and soap are necessary to get the dirt off. In hot weather, when we sometimes spend much time swimming, soap and warm water are not needed more than once a day, except on the face and hands.

People who have to keep their hands in soapy water a great deal of the time may wash off so much of the oil that the skin becomes dry and hard. Then it is likely to crack and split, and it may become sore if bacteria or germs get into these cracks.

If your skin becomes dry or rough, rub on a little cold cream or vaseline to keep it soft, so that it will not crack.

Sweat or perspiration. Our skin gives out sweat or perspiration. Most of the sweat is water, but there are other things in it; one of these is salt. If you touch the tip of your tongue to your sweaty skin, you can usually taste the salt.

There are many thousands of little openings in our skin which let out the perspiration. We perspire all the time, even in cold weather. Even when there is not enough perspiration to show on our skin, we are giving out over a pint of water every day. Turn back to Chapter VI and see whether you can find the experiment which proves that the skin is constantly giving out water.

By this time you must have found several reasons why we bathe. There is no better way of getting rid of the grime and perspiration.

There is another very good reason why we should bathe the whole body quite often. The skin is always wearing off; it wears off in little scales or flakes all over the body. These scales are so small that you may not have noticed them. Sometimes they stick together and make pieces large enough to be seen.

On such places as the elbows and knees you can sometimes scrape off some of the dried skin scales, which are usually removed by bathing.

Bathing and rubbing help the blood circulate. Rub your arm until it is red. What makes it look red? Will the skin on your arm have more or less blood circulating or moving through it after a brisk rubbing like that?

Why does rubbing or massaging the scalp help the hair? Will brushing help make the hair grow? Do you brush so as to make the bristles rub the scalp? Do that gently each time as you draw the brush down over your hair.

If it isn't possible to take a bath with water every day, try a towel bath. To do this, rub the whole body briskly with a coarse towel. That will rub off the old skin scales and take off much of the perspiration and dirt on the surface of the body at the same time. You can get quite a fine glow from a towel bath; but most people prefer to bathe in water because they think water baths are more restful.

Bathing and clothing. Most people don't stop to think that keeping the body clean makes our clothes stay clean longer. Bathing leaves less oily dirt to rub off on our clothing, especially on our collars and cuffs.

A warm bath at night washes off the "soil and grime of the day," and it also helps keep the bedclothes clean. Washing clothing is about the hardest work done in the home; the best way to make the

washing easier for your mother is to take a good bath every day. Besides, nice clean sheets make the bed feel more restful.

Have you noticed how uncomfortable the foot parts of your stockings feel when you have worn them several days? If you cannot have fresh stockings at least every other day, why not wash your stockings yourself every night when you bathe before going to bed? This would keep your feet warmer in cold weather, besides making your stockings wear better. Soldiers on the march wash their socks every day, and boys and girls of your age could do the same thing.

We like to swim or bathe in cool water, because the cool water takes some of the heat from our bodies. We should be careful, however, that we do not cool the body too much. Stop before you begin to feel chilled. When you get out of the water, rub your skin briskly until it is dry. If you feel chilly, exercise by slapping the skin and running or jumping until you are in a fine glow. Daily bathing in cool water keeps the skin in good condition and helps prevent colds.

Ways of bathing. Swimming is one of the best ways of taking a bath. If you live where the outdoor water is clean enough for bathing, take a good many of your baths that way, when the weather is favorable, because then you get exercise at the same time.

Knowing how to swim may also be very useful in saving yourself or other people from drowning. Watch the newspapers and report to your teacher when you

find a case where knowing how to swim helped some one to save the life of another person.

People bathe in several different ways; some prefer a basin, some a bathtub, and many people now think a shower is the very best kind of bath to take.

People can keep clean even if they have nothing but a tin basin for washing. What was it the Irishwoman said to Tom? "Those who wish to be clean, clean they

FIG. 117. If you haven't a fine spray nozzle for the garden hose, you can make as fine a spray as you want by holding your thumb over the end.

will be." If your house hasn't a bathroom with a bathtub, there are several ways of arranging for a shower bath.

In Figure 118 the children are having a shower from a street hydrant, but a garden hose could be used. If you haven't a spray nozzle, pinch the end of the hose nearly shut, so as to make a fine spray.

The dooryard above has been covered with stones to make a good bathing place. Perhaps you would rather use a nice grassy place, or put some boards down to

FIG. 118. This street shower is made by attaching an iron pipe to a fire plug or hydrant. A fine sprinkler or spray nozzle on the other end makes a huge shower, ten to twenty feet wide.

make a loose floor to keep your feet clean until you can get your shoes on.

Cold water doesn't take off very much of the dirt. The rubbing afterwards has to do most of that, if you use cold water. That soils the towels very quickly.

A better way is to have a basin of warm, soapy water, rub yourselves with that, then have a short, quick shower with the hose or spray.

FIG. 119. This is a home-made shower, made from a tin pail. Why is it better to have many little holes instead of a few large ones?

Once a boy attached a bathroom hose or sprinkler to the warm water faucet in the kitchen and ran it out of the window to make a shower bath in the back yard. At several of the army camps, the men made

shower baths by boring holes in barrels which were placed above their heads. A big pail could be used the same way. One family uses a big sprinkling can, which is filled and put on the stove until the water is a little warm; then the mother gives each of the children a shower bath as he stands in a tub.

How to wash the hands. Select four boys who have clean hands, and ask them to make their hands very dirty by playing with a dirty ball or by rubbing a

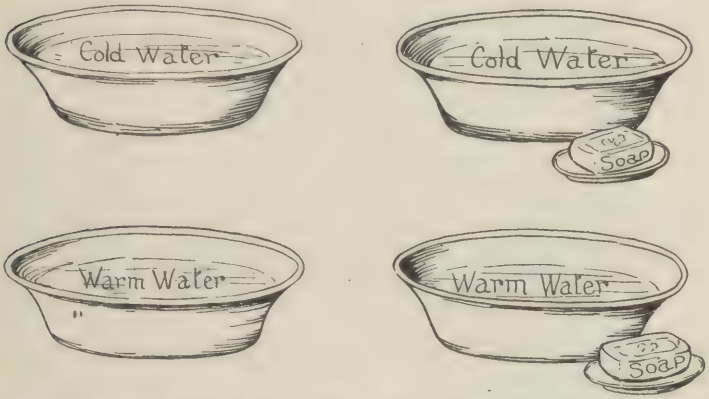

FIG. 120. Which way of washing will give the cleanest hands? Try it and see whether you guessed right.

little soot or lampblack on them, until the hands of the four boys look equally dirty.

Then have these four boys wash their hands in four different ways. Have four basins like those in Figure 120 ready for them, so they can start at the same minute. At the end of three minutes, have the boys hold up their hands, — first with the palms and then with the backs toward you. Which boy has the cleanest hands?

Have four other pupils do the same set of experiments. What is the best way to wash dirty hands?

The use of the nailbrush. Select two children and have them make their hands equally dirty, as in the hand-washing experiment just described.

1. Give each child a quart of warm water, a piece of soap, and a brush.

2. Have each one wash his hands as well as he can with soap and water, using the brush on one hand but not on the other.

3. Look at their hands — palms and backs — to see if both hands of each child are clean. Is there any

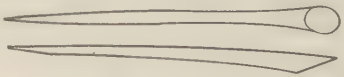

FIG. 121. A little moist cotton wound around the tip of a nail stick will help in cleaning the nails. The skin around the nails is less likely to be injured when cotton is used around the tip of the stick.

difference? Are the nails of both hands clean? How does the brush help?

The use of the nail file. Have two children wash their hands thoroughly in warm water, using both brush and soap.

1. Give each child a clean nail file, and let him clean the nails of one hand only.

2. An hour later have each child use the file on the other hand.

Which nails are the cleaner? When is the best time to use the nail stick or nail file?

Can you whittle a good nail stick for yourself?

FIG. 122. Children like to go wading so much that busy mothers might save time by letting them paddle every night in a tub with a little water in it, and so wash their feet. Wading is such good fun and such healthful exercise that every town should have a clean, safe wading pool for little children. (*Courtesy of Henry Street Settlement*)

Make one end round for the skin around the nails, and the other end pointed for the tips of the nails, as shown in Figure 121.

Care of the hair. Besides brushing the hair daily to keep it soft and glossy, we should wash it frequently. Most persons find that every two or three weeks is often enough, unless they are riding on trains or doing very dusty work. In washing the hair, use

FIG. 123. Any boy who knows how to use a penknife can whittle a nail stick for himself.

pure white soap, or white flakes dissolved in hot water, to make a good lather. After washing the hair and scalp in warm water changed several times until the last water remains quite clear, rinse in lukewarm or cold water, as you prefer. Be sure to wash out all the soap. Then rub the hair very dry with clean towels. Sunshine, or heat from a stove or radiator, will hasten the drying and lessen the possibility of taking cold.

Individual articles for bathing. Each child should have his own washcloths and towels, and plenty of space to hang them out to dry. If you cannot have fresh ones each time, be sure you wash out the used ones and spread them out to dry, so that they are not wet and sour when you want to use them next time. It isn't pleasant to think of using washcloths that are really dirtier than your skin.

Make some washcloths for yourselves — boys as well as girls — at home or school, and mark them with your initials. No home ever has too many washcloths. It is easier to get them clean again if they are not used too long. Partly worn towels and tablecloths can be cut up into nice soft washcloths. Outing flannel also makes good washcloths, and many people like cheesecloth ones, especially if they are large enough to use doubled.

THINGS TO ASK, ANSWER, TELL, OR DO

1. What made Tom, the chimney sweep, know at last that he was dirty?
2. Is our skin always clean when it looks clean? Why?
3. Why do warm water and soap make us cleaner than just cold water?
4. What other reasons for bathing are there besides that of keeping clean?
5. Of what use are towels except to dry us off?
6. How often should we bathe? Why?
7. Tell why you agree, or do not agree, with people who say that we should always bathe in cold water.
8. Name four ways in which bathing has something to do with clothing.

9. Why is swimming such a good way of taking a bath?

10. In the summer, will swimming alone keep us clean?

11. What ways are there of taking baths besides swimming and using a bathtub?

12. What does this book tell you to do if your skin becomes dry or rough?

13. How many towels and washcloths does a family need for use at one time?

14. How can washcloths be kept from getting "sour"?

CHAPTER VIII

ENEMIES TOO SMALL TO SEE

Here is a photograph of a box of garden soil which was kept in a sunny window for two weeks. A little water was sprinkled over it whenever the soil began to dry out.

Where did all these plants come from? Most of them are what people call weeds, but some of them may be useful plants, like radishes, tomatoes, or grass.

FIG. 124. Read this page to find out why these plants appeared in this box of garden soil.

The little seeds that made these plants were so small that they were not noticed when the soil was put into the box.

Why foods spoil. There are other little plants that, like weeds, grow where they are not wanted. Some grow in milk; some of them grow in water; others live in a great many different kinds of food. Sometimes they

grow so fast that, before we have guessed they are there at all, they have spoiled the food. Then it has a different look, or smell, or taste, and you say that the milk is sour, or that the bread is moldy, or that the canned peaches are spoiled. Some of these tiny little plants are called germs or bacteria; others are called molds. They haven't any leaves or flowers at all, like most plants, yet they are really plants.

Bacteria in the mouth. Some of these little plants grow in other places where they find enough food, especially if the places are warm. Several kinds of

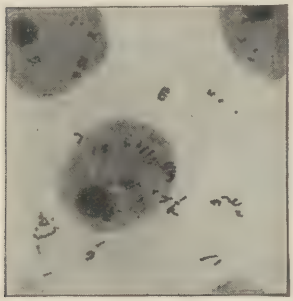

FIG. 125. Some of the bacteria often found in the mouth are shown here. The three large bodies are small pieces from the inside of the cheek or throat. Cleaning the teeth or rinsing the mouth with water washes out some of the bacteria and the things they might use for growth.

bacteria grow in your mouth, between your teeth or along the gums. Some of these are "bad" plants, like the weeds that came up in the box of garden soil; some of them aren't "bad" at all.

We do not like to think that these little plants or germs are growing in our mouths, and so we clean our teeth to take away the little pieces of food that help them to grow. They grow very fast; one little plant can make millions of new ones in a single day.

And so we clean our teeth several times a day, rinsing our mouths well with clean water, to keep most of these plants or *germs* from finding *food* to grow on. Dentists agree that the teeth should be cleaned after each meal and before going to bed, as well as on rising in the morning.

When you put your fingers into your mouth they get wet with saliva. You will see on page 162 a drop of saliva which was put upon a piece of glass and looked at through the magnifying glasses in a microscope.

The drop of saliva was full of little bits of food material and many germs — long ones and round ones, like the bacteria in the picture.

Keeping bacteria out of the mouth. What would happen if, when your fingers were wet with saliva, you put them into the baby's mouth to count his teeth? Giving him some of your germs might not make him sick, but we never know when we may have the wrong kind of germs on our fingers. We didn't know there were weed seeds in the garden soil either, did we?

We should be careful to touch the food or anything else that goes into our own mouths or into the mouths of other people with *clean* hands only, never with dirty ones.

Wash your hands — even though they look clean — just before you eat, before you wipe the dishes, set the table, or cut bread or cake. In picking up cups or glasses, do not touch the rims that other people are going to put to their lips. People do not like to

think that they are swallowing germs left by your fingers. Handle food with a fork or spoon whenever you can. If you must use your fingers, be sure they are dry and clean: be sure, too, that you have washed them since you touched your nose or mouth, or such things as soiled handkerchiefs.

Spreading nose and throat germs. But you are probably wondering what is the use of being so careful about your fingers and mouth, when there are also germs in water and milk, and even in the air. This is true, but very few "bad germs" get into the air, milk,

FIG. 126. Show how *you* would carry a clean glass.

and water, except from people and such common animals as cats, dogs, and cows. Germs do not live very long in the air; they cannot grow there, and they die off very soon, unless they happen to float or fall where they find food for growth. When people sneeze or cough or spit, some of the germs from the mouth may float toward people near by. When some one carelessly coughs into your face, you may breathe in some of his live germs before they have time to die off. If

FIG. 127. When you feel a sneeze coming, get a handkerchief ready and "catch" it quickly. (*Photograph by Edith Ricker*)

any of these happen to be the kind that make people sick, you may catch a sore throat or a cold.

Cover your mouth and nose when you cough or sneeze; keep in your pocket the handkerchief that you have used, and change it for a fresh one whenever it becomes soiled. Fold your handkerchief with the used side in, so as to keep from soiling your fingers and the inside of your pocket. When you have a cold, try to get some old pieces of soft muslin or paper napkins to use, so that you can burn them after they have been used.

Some of our sicknesses we can give to other people, and some we cannot. Can you "catch" a broken leg or a headache? Can you "catch" measles or whooping cough? a cold or a sore throat?

We should be careful not to do things which may spread the germs of disease. When we are beginning with such diseases as measles, diphtheria and scarlet fever, the germs may be present in the throat several days before we become ill. Why should strangers not kiss little children, who are so easily affected by germ diseases? Why should even well people be careful

FIG. 128. After the water begins to boil, leave the jar of soil for at least thirty minutes, to kill most of the weed seeds.

when they cough or sneeze? What should be done with the dishes and forks and spoons that sick people have used? Read the next three paragraphs to see why we use the way given in Figure 129.

How to kill germs. How can we kill the "bad" germs? How can we kill weed seeds in the garden soil? Fill a fruit jar or a tin can of garden soil, such as we used before, and heat it in a pan or pail of boiling water, just as some people do when canning fruit. The picture shows how to do this.

After cooling the heated soil, put it in a box in the

window; keep it moist, just as we did the other box of soil, and see whether weeds will grow. What did the heat do to the seeds in the soil?

How can we make our dishes and table things hot enough to kill germs that sick people may leave on them? We don't want to bake our dishes, but we can steam them or boil them in water. That will not hurt the dishes and spoons and forks, but it will kill the disease germs.

Sometimes in illness the doctors order us to use chemicals to kill the germs which may be present on hand-

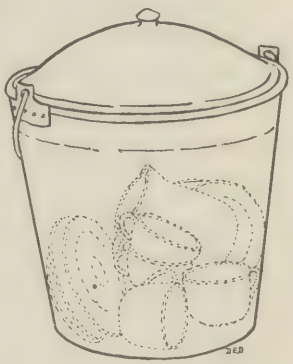

FIG. 129. If the water doesn't cover the dishes, turn them over, so that every part of each dish is in boiling water for five minutes. Then you will surely kill all the germs that sick people may leave on the dishes they use.

kerchiefs or clothing. We often use such chemicals as alcohol or iodine, to treat cuts or other wounds. Other chemicals are useful in treating the nose and throat. Table salt and baking soda dissolved in water are often used as a gargle for sore throats. In your home, what other chemicals have you found useful for killing germs? What useful chemicals are mentioned in Chapter I?

When we are sick we should ask the nurse or the

doctor whether anything needs to be done to keep the rest of the family from catching our illness. It is a great bother to boil dishes, towels, and handkerchiefs, and to use chemicals for killing germs, but keeping the rest of the family well is worth all that trouble.

How good manners protect against germs. People who are polite and thoughtful follow certain rules of good manners to keep germs from the food of other people or from places where they will get into their mouths. Some of these rules are given below.

1. Never handle cakes, rolls, etc., in bakeshops.

2. When fruit or bread is passed to you, touch only the piece you take from the plate. (Never break a piece and then return a part you have touched.)

3. Take hold of spoons, forks, and knives by the handles when passing them to people or setting the table.

4. Do not cough or sneeze without covering your mouth and nose.

5. Keep used handkerchiefs in your pocket.

6. Do not wave used handkerchiefs around in the air.

7. Do not touch the rims and insides of cups, glasses, and other dishes that hold food.

8. Never put a spoon or any table tool which has been in your mouth into food to be eaten by others.

A great many other rules and customs that we call good manners help us keep from giving our germs to other people. Why do we cover the mouth when we cough? If the milk or cream pitcher drips at the spout, why should we *not* wipe off the drops with our

napkin or our fingers? Is it good manners to touch other pieces of candy in the box before taking the one you are to eat? How many other rules of good manners can you name?

Keeping germs from baby's mouth. When you are taking care of a baby that has learned to crawl or walk around, one of the hardest things to do is to keep him from putting the wrong things into his mouth.

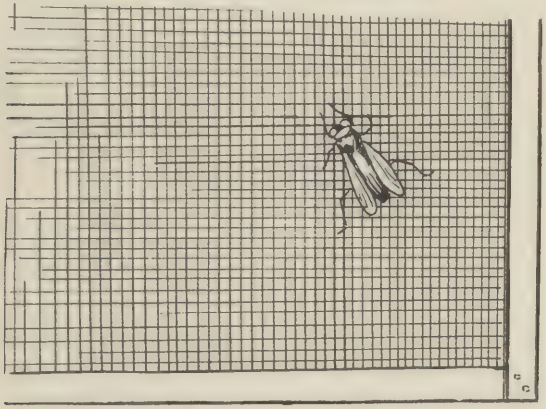

FIG. 130. Do you keep the flies inside or outside the screens of your house?

When a baby's teeth are coming through, the gums are very tender or sore, and he likes something to rub against the gums. We can tie a clean rubber ring to a ribbon around the baby's neck so that he will chew that instead of his shoe or some other dirty thing. Teething rings should be washed in hot water with any white or castile soap, several times a day.

Watch a baby for just one day and see how many things he tries to put into his mouth. How many of

these had been on the dirty floor or ground? How many had been handled by people with soiled hands? It takes a long time to teach a baby that only certain things should go into his mouth. Some people never learn it, and they hold all kinds of things in the mouth — money, string, hairpins, pencils, and many kinds of tools — just as if the mouth were

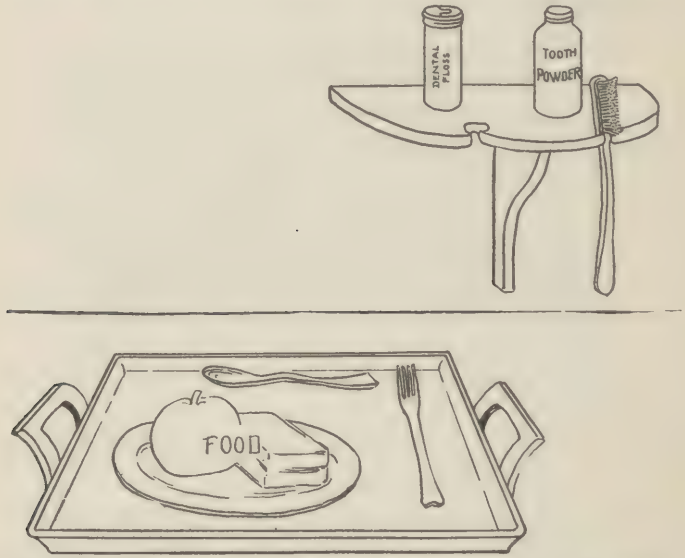

FIG. 131. Which of these six things are not mentioned on this page?

another hand. This picture shows the only things that should go into the mouth. There are six — food and another one beginning with *f*; one begins with *s*, and on the shelf above are the other three. Are fingers in this picture? If a bone or a bristle from a toothbrush gets caught in the mouth, or be-

tween the teeth, you may have to use your fingers, but be sure that they are clean.

How to turn pages. Many people are careless about putting saliva on things other people have to handle. Such careless people often wet the thumb or finger to help them turn the pages of a magazine or a book.

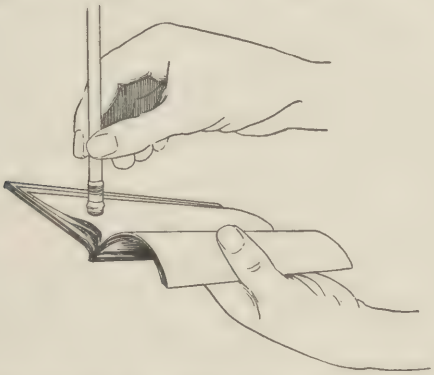

FIG. 132. Practice with an old magazine until you are sure you can turn pages more rapidly with a pencil eraser than without it.

Conductors often do the same thing with their little book or bundle of transfers.

Keep a rubber eraser, or a pencil with an eraser on one end, in your pocket; then you can use the rubber to help you push up the end of the paper when you want to turn the leaf over. It is very easy to do, if you get used to it. Clerks who have to look through great piles of papers can look through them very much faster that way than by using the fingers.

Safe milk. Sometimes disease germs get into milk that is carelessly handled. To make sure that we are

not getting disease germs with our milk, we can heat it to kill any that may be there.

Boiling milk changes its taste, and so we heat milk just enough to kill the harmful bacteria. This way of heating foods to kill bacteria was first used by a Frenchman, Louis Pasteur. When we heat milk to kill disease germs we say we *pasteurize* milk. Why do we say *pasteur-ize*?

Many cities are so careful about the health of people, especially babies and little children, who drink a

FIG. 133. Three kinds of labels found on milk bottles in some cities Why should all milk, unless certified, be pasteurized before it is used?

great deal of milk, that they have laws requiring that the milk be pasteurized before it is sold to people. All milk sold in New York City and in most other big cities must be pasteurized, unless it comes from cows that have had a special examination to show that they are healthy, and unless the cows have been milked with great care to keep bacteria and dirt from getting into the milk. Such milk is called "certified" milk. We call it certified milk because the doctors are willing to certify that it is good, safe milk. It usually costs more

than other milk, because farmers and dairymen must be paid for the extra trouble they have to take.

Pasteurized milk is *safe* milk; and if we cannot get certified milk for the babies, we must be sure to use pasteurized milk. If our milkman does not sell pasteurized milk, we can pasteurize it ourselves, by heating bottles of milk as we heated the jar of soil in Figure 128. Pasteurized milk is heated for at least half an hour at a temperature a little lower than boiling, as shown in Figure 134.

FIG. 134. Examine these thermometers to find the difference between boiling and pasteurizing.

Insects carry germs. One night a tiny croton bug, that had been crawling around over the floor and into the garbage pail, found its way up to the table where we kept our food and crawled over a dish of lemon jelly that we had left there to cool. We didn't know anything at all about it; and we put the lemon jelly away in the cupboard and forgot about it until the next day. Then the top of it looked like this. For a long time we couldn't guess what these little dots were. Have you guessed yet?

That dirty croton bug had walked all over our jelly

— eating here and there as he went, probably. At any rate he left his tracks — a double line — right legs on one side and left legs on the other, as he walked along. The little germs from the floor and the garbage pail began to grow just where he wiped them off on the jelly; and, by the second day, in every footprint there were so many germs that now you can see them yourself.

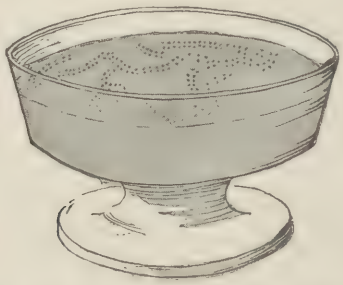

FIG. 135. A croton bug made the tracks on this dish of gelatine. Each little spot is made of millions of germs or bacteria. If we counted each spot as one million bacteria, how many would a person swallow if he ate this dish of lemon jelly?

Mosquitoes can carry the germs of malaria and yellow fever from persons ill with such diseases to the well people they bite afterward. Why do some states spend thousands of dollars draining marshes and other wet places where mosquitoes breed?

Protecting our food. If people stopped to think of all the dirty places that flies like, they would not let them get at their foods. The only sure way of keeping flies and other insects away from our food is to keep them out of the house.

Turn back to the chapter on food and see what we should do to keep our foods clean. One way to help is to make sure that we do not leave food around that will attract flies, croton bugs or cockroaches, rats and mice. Empty the garbage cans before the odor begins to attract such animals. Using a newspaper lining for the garbage can will make it easier to keep it clean. Many people who are very particular about keeping

FIG. 136. This glass shows two prints made by dirty fingers. When the finger print is examined with a microscope it looks like the picture at the right, and shows many bacteria.

themselves and their clothes clean and neat are very careless about their food.

Common sense about germs. Some people are very careless about giving their germs to others, and do not like to take the trouble to do things the clean way. They get cross sometimes if other people are careful, because that shows them how careless they are. You will often hear them say that they'd rather not bother about such things; that they'd rather not know the germs are there.

That is really very silly. We can catch colds or other diseases from persons, even if we do not know that they are spreading germs around. Not knowing about it doesn't keep us from danger. Those who

FIG. 137. These boys came from a neighborhood where there are many people with tuberculosis, and the doctor is examining heart and lungs to make sure the boys are in good condition before they go to a summer camp. (*Courtesy of Henry Street Settlement*)

know and think about such things help keep themselves and others well.

How doctors help control germ diseases. Diphtheria, chickenpox, scarlet fever, mumps, measles, meningitis and whooping cough are some of the children's diseases which are caused by bacteria and other

germs. Smallpox, pneumonia, typhoid fever, and dysentery are diseases which may attack children as well as older people.

Doctors are now able to make tests to see if we are likely to take diphtheria, if we should happen to be exposed. Cattle are often tested to find out whether they have tuberculosis or not and, in some states, this test must be made on cows every six months if their milk is to be sold as "certified milk."

Everybody knows that smallpox can be controlled by vaccination, and epidemics of smallpox come only in places where there are many people who have not been vaccinated. Another kind of vaccination was used in the Great War for protecting millions of soldiers from typhoid and dysentery. Diphtheria, too, can often be prevented by vaccination.

Doctors have found that it is possible to give horses several of our diseases in a mild form and then use their blood to help protect us. The "antitoxin" sometimes used in curing diphtheria is obtained in this way from the blood of a horse, as is the "antitoxin" for lockjaw or tetanus. In pneumonia, the blood substance the doctors use is called "pneumonia antiserum."

FIG. 138. Notice all the bristles and tiny hairs on the fly's foot which is shown here. Could they hold many bacteria?

Ten Golden Rules of Health for School Children

1. Play hard and fair—be loyal to your team-mates and generous to your opponents

2. Eat slowly. Do not eat between meals. Chew food thoroughly. Never drink water when there is food in the mouth. Drink water several times during the day

3. Brush your teeth at least once a day. Rinse your mouth out well with water after each meal

4. Be sure your bowels move at least once each day

5. Keep clean—body, clothes, and mind. Wash your hands always before eating. Take a warm bath with soap once or twice a week; a cool sponge (or shower) bath each morning before breakfast and rub your body to a glow with a rough towel

6. Try to keep your companions, especially young children, away from those who have contagious diseases

7. Use your handkerchief to cover a sneeze or cough and try to avoid coughing, sneezing, or blowing your nose in front of others

8. Study hard—and in study, work, or play do your best

9. Sleep: Get as many hours in bed each night as this table indicates for your age. Keep windows in bedroom well open

HOURS OF SLEEP FOR DIFFERENT AGES

Age	*Hours of Sleep*
5 to 6	13
6 to 8	12
8 to 10	11½
10 to 12	11
12 to 14	10½
14 to 16	10
16 to 18	9½

10. Be cheerful, and do your best to keep your school and your home clean and attractive, and to make the world a better place to live in

Prepared by Dr. Thomas D. Wood,
Teachers College, Columbia University

Committee on Health Problems of National Council of Education and American Medical Association

THINGS TO ASK, ANSWER, TELL, OR DO

1. How can you prove that there are seeds in garden soil before you plant or sow any?

2. Tell what is happening when food spoils.

3. What have you in your mouth which I could not see if I looked?

4. Is it enough to wash your hands only when they look dirty? Why?

5. Name some "catching diseases."

6. How can you help to prevent the spread of "catching diseases"?

7. Name some ways of killing germs.

8. Make up a play about "How Good Manners Protect against Germs."

9. Make a poster to show how a baby can be protected from germs.

10. Make a poster about something else in this chapter.

11. Why do we pasteurize milk?

12. Find on the opposite page one rule to prevent spreading disease germs.

FIG. 139. Did you ever hear of a cat's getting caught in a hole or crack that was too small? How does a cat know where it is safe to go? (*Photograph by C. Clarke*)

CHAPTER IX

OUR SENSE ORGANS AND THEIR CARE

We have five senses: (1) feeling or touch, (2) hearing, (3) smell, (4) taste, and (5) sight. The eye is the organ for seeing; the skin is the chief organ for feeling. What are the organs for the other senses?

Feeling. Let some one test your sense of touch in different parts of your skin, using a pair of scissors, or a pair of compasses, as shown in Figure 140. Shut your eyes and see how many times you can guess correctly whether one or both of the points are touching the skin of your arm. How far apart are the points

when they feel like just *one* point? Put them on the finger tip and see if the fingers are more or less sensitive than the arm.

This sense of touch is more important than we realize. It is constantly telling us a great deal about the objects around us.

Collect a number of objects which have different kinds of edges or surfaces, as in the lists below.

Edges or Corners	Surfaces
sharp	smooth
dull	rough
blunt	hollowed
rounded	bulging
pointed	ridged
rough	flat

Shut your eyes while one of your classmates rubs one of your fingers gently over the different articles.

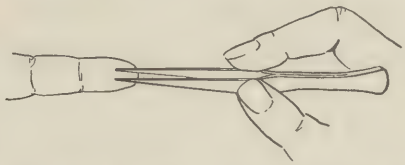

Fig. 140. Hold the tips of a pair of forceps or scissors as close together as in the picture and see whether your finger tip or the back of your hand is more sensitive to touch. Why can blind people read raised letters with their finger tips — and in a few cases even with their lips?

Can you tell which ones you are touching? Can you tell the shape and the size of objects in this way?

This sense of touch or feeling has a great deal to do with our comfort. Rough edges on our starched

collars or cuffs annoy us, but the smooth surfaces of freshly ironed waists or clean sheets feel very pleasant indeed. Woolly blankets annoy us when they work up above the sheets and rub against our faces; and many people dislike the feel of woolen underclothes, especially if they are made of coarse wool.

Scientists tell us that the sense of touch is very helpful to many animals, and that some of them have special organs of touch. Cats, rabbits, and rats have whiskers that stick out on each side of the face and

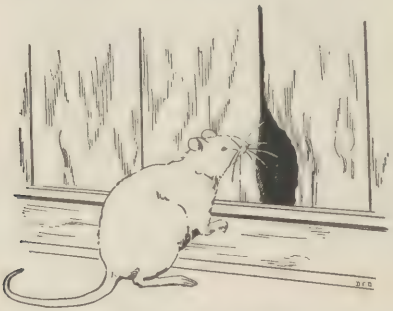

FIG. 141. How does a rat know when he has gnawed a hole big enough to let his body through?

warn the animal if it tries to go into a hole that is too narrow. Some insects have long feelers that help them find their way around in dark places.

Feeling heat and cold. The skin tells us about temperatures also. Its many nerves tell us when we are too warm or too cold; and this leads us to open or shut the windows, to move to a cooler or a warmer place, to change the amount or kind of clothing, and to move or exercise more or less rapidly.

Feeling pain. Feeling pain is not the same thing as the sense of touch, though we do say we *feel* pain, and we often feel it through the skin, as in the case of a burned finger. Pain is a sign that something is wrong; it tells us that some part of the body is working too hard, or has been strained or hurt, or has become diseased.

Our eyes may pain us because we have used them too long or have been reading in a dim light; our stomachs may ache because they have food they cannot digest properly; our teeth may ache because we have cracked their hard surfaces biting nuts, thus allowing bacteria to find their way into the soft part of the teeth; or our hands may hurt because we have blistered the skin.

Good, healthy eyes, ears, teeth, and noses do not give us pain. If yours hurt or ache at all, let a nurse or doctor examine them and tell you what to do.

Hearing. The outer part of the ear is like the mouth part of the speaking tubes we sometimes see in factories or apartment houses. It collects sounds and sends them into the tube of the ear. Sometimes people who cannot hear well hold the hand around the ear so as to collect more sounds to send into this tube.

At the inner end of the ear tube is a thin membrane, which is stretched quite tight, as membranes are stretched over the ends of a drum. This membrane or eardrum is delicate and easily injured. Sharp things poked into the ear to clean it may injure the eardrum, and so interfere with our hearing.

Care of the ear. Never use a hairpin or anything sharp to clean out the wax which collects in the ear tube. If so much collects that it shows in the tube, wash it out with warm water and white soap. Fold a soft washcloth over the tip of the little finger, or twist the corner of it into a point so that it is small enough to go into the ear tube.

If any small object gets into the ear, lie down or hold the head sidewise while some one fills the ear

FIG. 142. When the boy talks into this speaking tube made with two funnels and a long piece of hose, the sound waves travel to the other funnel and reach the ear of the girl who is in another room. When the girl's eardrum catches these waves she hears what the boy is saying.

with warm water. Keep it there a few minutes and then turn the head over to let it run out. If an insect gets into the ear, use warm olive or salad oil in the same way, and the insect will probably come out with the oil. If this treatment does not help, see a nurse or a doctor as soon as possible.

Never make loud noises close to the ear; shots, exploding paper bags or firecrackers, or any loud noise may send air into the ear with enough force to injure

the eardrum. "Boxing the ears" is very likely to injure the drum in the same way.

Smelling. Of what use are noses? Have you seen dogs, horses, or other animals sniff their food before eating it?

Do hunters move in the same direction as the wind, as they creep stealthily nearer wild game? Why?

The noses of most animals have three uses: (1) to smell prey, (2) to discover enemies, and (3) to help tell what is good to eat. For which of these do you sometimes use your nose? Name one animal which uses its nose for all three.

Can you breathe while holding your nose shut? Can you breathe while holding your mouth tightly closed? Which way do you breathe when you try to smell a flower or a bottle of perfume?

Try to smell a piece of onion or anything with a strong odor while breathing through your mouth and holding your nose tightly closed with your fingers. Does this prove that you smell only when air passes through the nostrils?

Noses are used for smelling, and humans and all land animals which have a backbone also use their noses for breathing. Any odors in the air will be smelled as the air for breathing is drawn through the passages of the nose. Animals and humans often sniff and breathe deeply, so as to draw in more air and get a stronger odor.

Tasting. Did you ever play the game which shows how easily people can be fooled about the tastes of

different foods? Sometime, when you want a little fun, cut some small pieces of onion, radish, potato, apple, and carrot, and give them to some one who is blindfolded; have him hold his nose while he eats these pieces, and see whether he can tell what he is eating. You will then see that the nose tells us more about our foods than we had thought. What we sometimes call taste is smell, at least in part.

There are some flavors, however, that are not odors. Touch a little sugar and salt to the tongue while you hold the nose. Do they taste like sugar and salt? Try vinegar or lemon juice on the tongue in the same way. Why is the tongue usually called the organ of taste?

Sometimes, when we have a bad cold, the membranes in the nose are very swollen, so that very little air gets into or through the nose passages. Can you explain why we can still taste sugar and salt, while some of our food has very little taste at such times, and we say it is "flat" or tasteless?

Nose and throat for breathing. When we tried holding the nose, we found that we could breathe through the mouth. Breathing through the nose, however, is the natural and healthful way.

Sometimes "bad colds" in the nose make people breathe mostly through the mouth; but usually such stopping of the nose lasts only a few days.

If we breathe through our mouths we have to hold them open, of course. People who keep their mouths open look stupid. Did you ever see a person who

looked very alive or very alert, who kept his mouth open?

Air is drawn through the passages of the nose, through the throat, into the windpipe, or trachea, and then into the lungs.

Hold a mirror so as to see the little hairs inside the nose. What happens to much of the dust or other impurities in the air we take in through our noses, as it is strained through these hairs? Which gives cleaner air for our lungs — breathing through the mouth or through the nose?

Tonsils and adenoids need attention. You cannot see the adenoids, which are little soft or spongy bodies that grow in the passageway between the mouth and the nose. Sometimes these become so enlarged that they interfere with nose breathing; children with such enlarged adenoids can breathe more comfortably with their mouths open.

But we have already learned several reasons why mouth breathing is not the best way to breathe. Besides, the nose pathway or passage to the lungs is very much longer than the mouth passage, and even cold winter air entering through the nose becomes quite warm before it reaches the lungs.

If the adenoids are too large to leave a clear passageway for air, they should be taken out by a doctor. They may make children have colds more often than they would otherwise, and many children do not do their school work well until their enlarged adenoids are removed.

Little children who have large adenoids or tonsils should have them taken out by a doctor as soon as they are discovered — even before going to school. A child is sometimes scolded for being slow or stupid when what he needs is proper care of his nose and throat.

FIG. 143. Both these children have adenoids, and hold their mouths open so as to breathe more comfortably. Why is that kind of breathing bad for them? (*Courtesy of Henry Street Settlement*)

The tonsils are far back in the throat in the cavity of the mouth, one on each side of the passageway to the throat. They can be seen in a hand mirror. Sometimes germs grow in them, causing such diseases as tonsilitis. Children with diseased tonsils are likely to have frequent sore throats, which may be prevented by removing the tonsils.

Keeping the nose clean. This is just as important as keeping the mouth and teeth clean. People rarely mention it, because it is one of the things everybody is expected to know about and to do. But while most people are careful to use a handkerchief, a great many people do not know how to blow the nose. They try

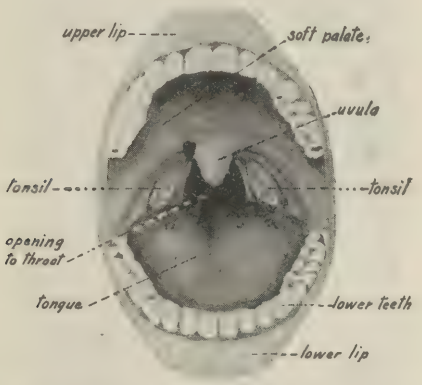

FIG. 144. Face the light and hold a hand mirror so that you may see the tonsils near the back of your tongue.

to blow both sides at once. You should not blow both sides at the same instant, because you may force air into the tube which leads from the nose to the ear. Instead, you should press one side of the nose shut while you blow down through the other side of the nose. Try it, to see if you can do this easily and naturally with one hand, so as not to attract attention.

When to use the handkerchief. We should use a handkerchief (or paper napkin) whenever there is anything in the nose that needs to be removed. Even if

we haven't a cold, we should clean the nose at least twice a day, by blowing out the dust that has collected in it.

After you have been doing dusty work, such as

FIG. 145. In blowing the nose, blow one side at a time, holding the other side shut. When you have colds, you may force disease germs up into the tube that connects the mouth and the ear, if you blow both sides of the nose at the same time. (*Photograph by Edith Ricker*)

sweeping or sifting ashes, be sure to blow your nose as well as to wash your face and hands.

Care of the mouth and throat. Loud screaming or yelling may strain or irritate the throat. Sometimes at ball games people shout and yell until they are

hoarse. If they could see their throats, they would find them red and inflamed.

This condition is not good for the throat, and it is easier for germs to grow in such throats. It is also bad for the voice. Singers are very careful not to strain their voices or to catch cold, because they know such things may injure the voice forever.

Most people, however, do not realize how easily children may injure their voices by shouting and screaming, or even by singing songs that are too high.

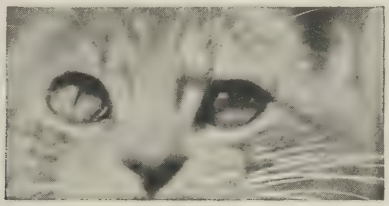

FIG. 146. Does the shape of the pupils in this animal's eyes tell you what animal it is? Was this photograph taken in a light or a dark place? (*Photograph by Edith Ricker*)

By doing these things we may injure not only our singing voices, but also our speaking voices. No doubt your teacher has already told you this if you sing too high.

Watch the older people you know, and decide which man and which woman has the pleasantest speaking voice. Watch yourself and see if you can make your voice softer and more pleasing. Do you have just as good a time on the playground as the children who make shrill, ear-splitting noises?

Eyes. The eye is so delicate that it has a special covering, called the eyelid, to keep it from becoming

injured. When anything comes too close to the eye, the eyelid covers it "just as quick as a wink."

Does your eyelid move up or down? Look at your canary bird, at a chicken, a toad, or a frog, and see how their eyelids move. How do their eyelids differ from ours?

Some water animals have no eyelids at all. The fish has none. Is a fish very likely to get dust into its eye?

In the middle of the eye you will see a small, round, black spot called the pupil. That is where the light

FIG. 147. The pupils in this girl's eyes are very small because she was facing a bright light. The colored area around each pupil is the iris. The white spots near the pupils are caused by reflected light. (*Photograph by Edith Ricker*)

enters the eye. What shape is the pupil in your eye? Examine the eyes in Figure 149. What shape is the pupil in the chicken's eye?

When it is very light a very little hole will let in enough light for seeing. Look at the eyes of some one at home and see how small the pupil is when he is in a well-lighted room. Then ask that person to go into a dark place for five or ten minutes. When

he comes back, notice the size of the pupil. What change takes place as he stays in the lighted room?

Owls and other animals that use their eyes a great deal at night have very large pupils. Cats have eyes that see well both during the day and at night. Their pupils can change in size so as to let in the right amount

Fig. 148. This ostrich's eye looks queer because he has covered it with the third or inner lower eyelid. The lower eyelid, that is like ours, is open and shows a light line at the lower part of the eye. (*Wide World Photos*)

of light. Put a cat in a dark and then in a light place, and notice how much its pupils change.

Care of the eyes. While the pupil of the eye can change, letting in more or less light, as needed, it cannot always change enough to enable us to see in very dark places or in intense light.

What happened to the eagle who "flew into the sun"? You, too, have already learned, no doubt, that it really hurts your eyes to stare too long at a very bright light. Why is it better to have several small lights in a room instead of one strong bright light? Why do we object to having clear glass globes over the strong electric lights that we use in offices

FIG. 149. Is the pupil of this chicken's eye shaped like yours or like a cat's? Where is the chicken's nose? (*Photograph by Edith Ricker*)

and public buildings? Why do the laws prohibit plain glass in automobile headlights?

Close work with too little light may harm the eyes. It is not wise for us to use the eyes in close work, such as writing or sewing, in dim light, because the eye muscles have to work too hard. That makes the eyes ache and sometimes causes headache also.

We often strain our eyes by going on with our read-

ing or other work as it grows dark, at the end of the day. We foolishly think it is too much trouble to get a light, and so we try to finish what we are doing before we quit or go to get proper light. This is a great mistake? Why?

Another way in which we strain our eyes is by not having our work at the right distance from the eyes.

FIG. 150. This little girl has very good light on the pages of her book, but it is not easy to keep the whole page at the proper distance. (*Photograph by Edith Ricker*)

Measure with a ruler to see how far from your eye you are holding this page. Move the book back and forth to find the distance at which the print seems clearest. Most children find fifteen inches a good reading distance. If it is less than twelve inches or more than twenty inches you should have your eyes examined to see if you do not need glasses.

Look at the illustration on this page, and select a good reading position for a book that you can hold in your hand. What is a good position for papers or things that must be flat on the desk? Does it make

FIG. 151. Notice that the light is falling over this boy's shoulder and that the pages are well lighted. The picture also shows a good sitting position for reading. (*Photograph by Edith Ricker*)

any difference whether the desk top is flat or sloping? Which way can you see more of the paper clearly at a time? In the best schoolhouses the seats are arranged so that the light comes from the left side; otherwise

most pupils would write in the shadow of their hands. Would this be the best position for left-handed pupils? Do you always sit so as to avoid shadows on your work when writing or reading at home?

Nowadays we use our eyes so much for reading, writing, sewing, figuring, or other "close work" that the eye muscles are often overworked. Look up from your

FIG. 152. This position for reading is better than that in Fig. 150, but sitting properly in a chair causes less strain on the eyes. (*Photograph by Edith Ricker*)

close work, and look far into the distance — across the street, or over the fields — once in a while. Another good plan is to shut the eyes for three or four minutes every half hour. Even if your eyes do not hurt you, it is a good plan to rest them in such ways. Make it a rule to do so, and it may help you keep your eyes strong and well.

Did you ever notice how hard it is to read on the trolley or railroad train? Why? Make a list of other places where it is hard to read. If school children have to study while they travel to school on the cars, they should study the lessons that they have to memorize,

FIG. 153. Every time you rock you move the book a little farther from, or nearer to, the eyes, and the eye muscles have to do more work than they should. Reading on a trolley car or swing is just as bad for the eyes. (*Photograph by Edith Ricker*)

because they do not have to read them so steadily. In studying spelling, for example, look at a word; close your eyes; see if you can see it with your eyes closed; or imagine you see it printed in the sky until you have learned that word.

Tears clean the eyes. A small amount of the tear liquid is always washing over the eyes and running down into the nose. It passes through a tiny tube which leads from the corner of the eye near the nose into the nose. When you cry, so much of the tear liquid washes down over the eye that it cannot get into this little tube or passageway, and it spills out on your face.

This tear liquid washes down tiny particles of dust that may chance to get into the eye; and sometimes even bits of coal dust, grit, etc., which stick in the eye, may be washed away by the tears.

Removing things from the eye. The eyelids and eyelashes help keep fine dust from getting into the eye, but sometimes a tiny bit gets past them. When this happens, never rub the eye. Lift the upper eyelid with clean fingers; pull it out and then down over the lower eyelid as far as possible. Keep it there while you blow the same side of the nose, holding the other side of the nose shut. That helps draw the tear fluid down into the nose, and may wash out the dust. After reading these directions, show your teacher how you would do this.

If this treatment doesn't relieve you, don't stick your finger or a dirty handkerchief into the eye, but have a nurse or doctor look at it. If you have to wait very long for help, drop a little boric acid solution into the eye, using a clean medicine dropper, or the tip of a clean spoon.

Keeping the eyes clean. You have already been warned about sticking your fingers into your eye. Do

not rub or press your fingers against the eye. You may press hard enough to injure it. Another reason is that fingers are rarely clean, even when they look clean. You might rub germs into your eyes, and so make them sore or inflamed. That is the real reason why you must not use washcloths and towels that other people have used. Even persons who seem well may have harmful germs in their eyes, or in their noses or mouths.

Glasses to help the eyes. Many children need glasses to help them see better. Often we can tell that our eyes need help because they hurt us, because our heads ache, because our eyes are red and inflamed, or because letters and other small objects cannot be seen clearly and distinctly. A great many children, and even older people, do not know that they are not seeing as clearly as they should. Nearly all schools have large cards with letters of different sizes, which may be used to test the eyes by seeing how far away the letters can be read.

Another way to test the eyes is to use a clockface like that in Figure 157. If the lines are not all clear black lines when you hold the figure at the proper reading distance, your eyes should be examined carefully by a doctor, because you may need glasses.

If you need eyeglasses, you should get them at once and use them just as the oculist directs. It is foolish to refuse to wear glasses because you think they "do not look nice." Do not put off getting glasses thinking you may not need them later, or that you may

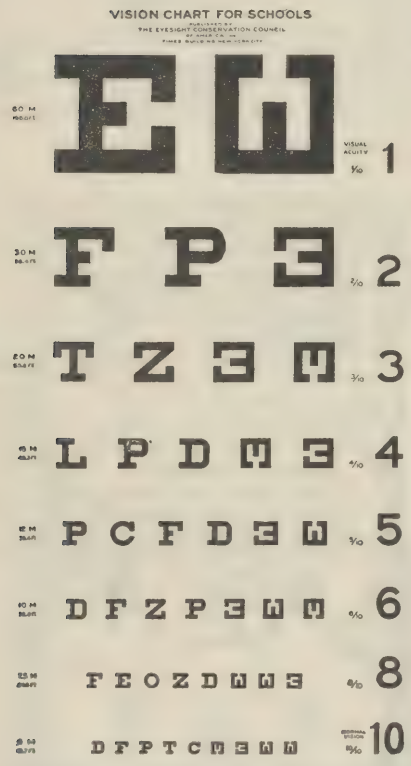

FIG. 154. Large charts of this kind are used in testing the eyes. A piece of an eye chart is shown full size on page 203.

outgrow the need for glasses, because the delay may be injurious to your eyes and to your general health as well. The sooner you get the right kind of glasses to rest your eyes, the better chance you will have of outgrowing the need for them. The longer you force your eyes to do without glasses, the more difficult it will be to overcome the headache or the nervousness that comes from eyestrain.

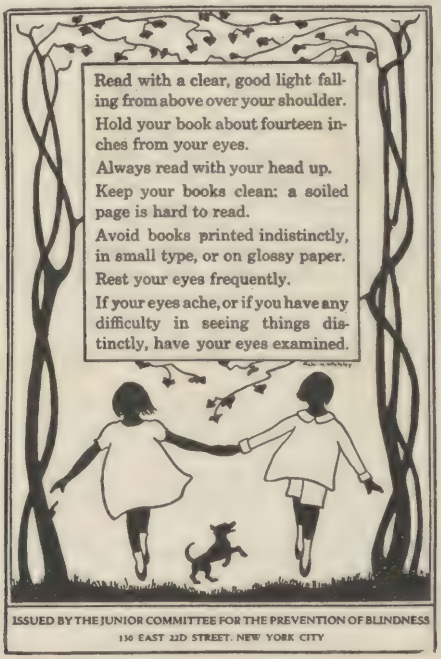

FIG. 155 Find here one new rule about using your eyes.

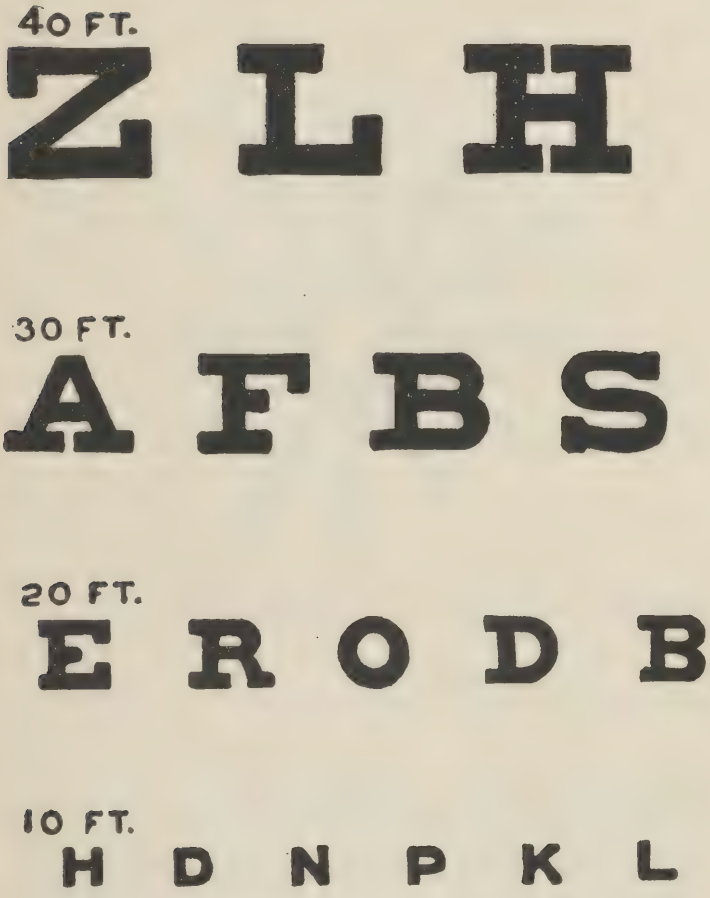

FIG. 156. Place this page flat against the wall and see if you can read the different lines at the distances given.

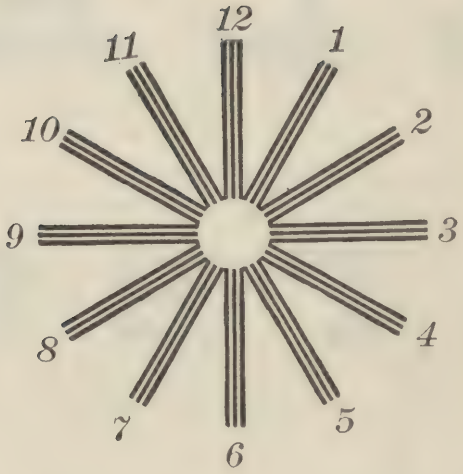

FIG. 157. Hold this page at proper reading distance. Do any of these sets of lines look paler or more blurred than the rest? If so, have your eyes examined for glasses, or you may strain them in your reading. Eyes should be tested separately by holding a card in front of one eye while the other is being tested.

Every school should have some big charts for testing eyes. They may be obtained from the Eye Sight Conservation Council of America, Times Building, New York City.

Red eyes, headaches, squinting, frowning, sore lids, or frequent stics show that the eyes should be examined by an oculist.

THINGS TO ASK, ANSWER, TELL, OR DO

1. Make a set of five pictures to show what the five senses are.

2. Do any animals have organs of touch which you do not have? Why is this?

3. Finish this sentence: "In Chapter —— on page —— of this book I read that "pain is a sign that —— —— ——."

4. Think of four careless ways by which you might injure your eardrum.

5. What would you do if your little sister should get a bug in her ear?

6. From what this book tells you about smelling and tasting, can you think of an easy way to take an unpleasant medicine?

7. Give two good reasons why you should breathe through your nose with your mouth closed.

8. Where are adenoids, and why do people have them taken out?

9. What is the right way to blow the nose? Why?

10. How do some children injure their voices in their play or singing?

11. Why do people need eyelids and fish need none?

12. Is the pupil of your eye larger in the dark or in the light? Why?

13. Do cats see better at night than we do? Why?

14. Make a poster which will show us how to take care of our eyes and keep them strong.

15. Give two good habits for resting the eyes while at work.

16. What are tears for?

17. What should you do when a cinder gets into your eye?

18. What are some of the signs that warn people that they need glasses?

19. Why is it foolish for a boy to go without his glasses because he doesn't think they "look nice"?

CHAPTER X

ALCOHOL AND OTHER HARMFUL DRUGS

Alcoholic drinks waste food. Before the recent great war, in the United States alone we were using each year at least 120,000,000 bushels of cereal grains, such as wheat, rye, and barley, in order to make beer and other alcoholic drinks. This did not include grains needed to make the alcohol used for drugs and for manufacturing purposes. Those millions of bushels wasted each year would have been enough to feed several million persons. During the war our people realized more than ever before how unfair it was to use grains to make beer and other alcoholic drinks when people were dying for lack of food.

Alcohol interferes with work. There are many people who harm themselves by drinking such liquors as beer and whisky. This affects them so that they become poorer workmen. They do not do their work so well; they make more mistakes at their printing, bookkeeping, or typewriting; they are more likely to have accidents when working with their machines or at other kinds of work; even the men who do heavy work like digging do not do so much work on the days when they drink alcohol as when they do not drink it. It is easy to see that the use of anything that interferes

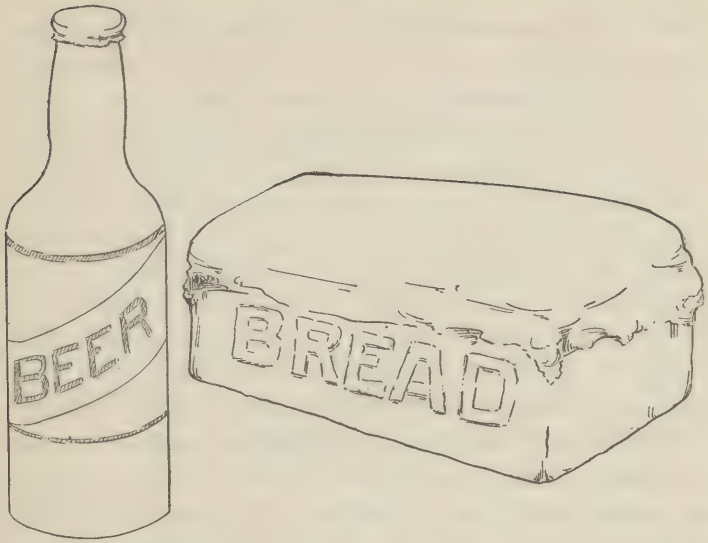

FIG. 158. Each of these costs twelve cents. Which of them would give a man more strength for his work? Do you agree with Benjamin Franklin about this?

with our work is harmful to us, because most of us have to work for a living.

Benjamin Franklin found out for himself that alcohol makes men poor workmen. This is what he said when he wrote the story of his life:

I drank only water; the other workmen, near fifty in number, were great guzzlers of beer. On occasion, I carried up and down stairs a large form of types in each hand, when others carried but one in both hands. They wondered to see, from this and several instances, that the "water American," as they called me, was *stronger* than themselves, who drank *strong* beer! We had an alehouse boy, who attended always in the house to supply the work-

men. My companion at the press drank every day a pint before breakfast, a pint at breakfast with his bread and cheese, a pint between breakfast and dinner, a pint at dinner, a pint in the afternoon about six o'clock, and another when he had done his day's work. I thought it a detestable custom; but it was necessary, he supposed, to drink *strong* beer that he might be *strong* to labor. I endeavored to convince him that the bodily strength afforded by beer could only be in proportion to the grain or flour of the barley dissolved in the water of which it was made; that there was more flour in a pennyworth of bread; and therefore, if he would eat that with a pint of water, it would give him more strength than a quart of beer. He drank on, however, and had four or five shillings to pay out of his wages every Saturday night for that muddling liquor; an expense I was free from. And thus these poor fellows keep themselves always under.

Why do athletic coaches and trainers not allow the men they are training to drink alcohol? If it is not good for them when they are playing baseball or football, is it good for them when playing other kinds of games or sports, such as tennis, running races, and wrestling?

Alcohol leads to poverty. Did you ever read George MacDonald's story of *Sir Gibbie*, the little boy who never had a pair of shoes, even though his father was a shoemaker? His father was really a kind man and fond of his little boy, but he drank so much that he never finished a pair of shoes for Gibbie. By the time he had made one shoe, he'd get drunk again and forget all about Gibbie's shoes until the shoe he had made

was too small, and then he would have to start a new pair of shoes. And so poor Gibbie went barefoot, winter as well as summer; and he hopped about on the icy sidewalks, one foot at a time, to keep his feet from freezing, while he was waiting outside the saloon to help his father home.

The shoemaker really loved his boy, but he could not control his appetite for alcohol. Such people aren't usually very nice or comfortable to live with. They often lose their positions because of their drinking habits. Their judgment becomes poor and they may lose customers, waste materials, and make poor investments. Their families often have to go without things they really need. Little children may even have to go cold and hungry because their fathers or mothers waste their money on beer and whisky. A great many of the charity cases that churches and cities have to help are caused by alcoholic drinks.

How alcohol harms the body. Alcohol makes the heart work harder, and so it pumps more blood than is needed through the body every minute. This stretches or swells the little blood tubes, and sometimes they stay enlarged so that the skin looks red all the time.

Often people who drink a great deal of alcohol show it in their faces. Their skins become very red, especially on their noses. Nobody likes to have a red nose; and nobody likes to think that those who look at him are thinking, "There goes a man who can't control his appetite for liquor."

Alcohol is like a whip. A whip makes a horse go faster; even a poor, tired-out horse goes more quickly if a whip is used. But a whip doesn't really give the horse more food or strength to go on. It only makes him use up faster the little strength that he has.

FIG. 159. Why does the Eighteenth Amendment to the Constitution of the United States prohibit the manufacture and sale of these alcoholic liquors?

Our bodies, too, will wear out faster if we make a custom of using alcohol. Insurance companies will not insure people who drink much liquor. This is because the records of thousands of drinking men have shown that most of them did not live so long as men who were not slaves to alcohol.

The alcohol habit is hard to break. People who use beer, wine, or whisky often drink more than they mean to take because liquor makes them thirsty, and then

they feel they must have another drink, and still another drink. There is an old saying, "A man takes a drink, and then the drink takes a drink."

Another reason why some people drink so much alcohol is because this habit is very easily formed. Such habits are also very hard to break. People who have the alcohol habit often suffer very much if they cannot get liquor regularly, and so they give in over and over again until the habit becomes so strong that they have not the will power to overcome it.

Did you ever read the tale of Rip Van Winkle? He was always pledging himself not to take another drink, but soon he'd begin drinking again. Every time he drank another glass, he'd say to himself, "This drink doesn't count."

One night, after a quarrel with his wife, he wandered up into the hills, where he found some little men of the mountains playing at ten-pins, and he drank some of their keg of liquor. It made him thirsty, and he drank more and more until he fell into a drunken sleep that lasted for twenty years. When he awoke, his dog was gone and his gun had become so rusty it fell to pieces. Rip did not guess he had been asleep for more than one night, and he was surprised when he went down to the little village to find his home deserted and none of his old friends in the inn where he used to spend most of his time drinking.

What was even worse, nobody knew him. In fact, he hardly knew himself, for now his hair hung down over his shoulders, and he had grown a long, long

beard. The boys poked fun at his odd clothes and his long beard, and the men quarreled with him because he talked about the king. He had slept through the whole American Revolution, and didn't know our people had changed the government and elected George Washington as the first President of the United States.

Perhaps the man who first told the tale about Rip Van Winkle was trying to make people see how much

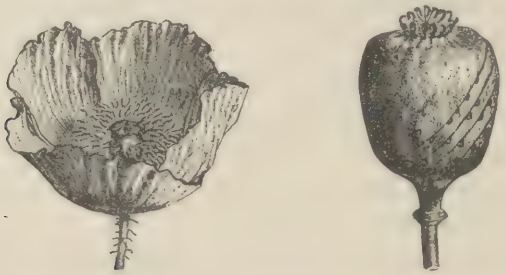

FIG. 160. A poppy flower, and its fruit, which contains a juice used to make opium. The pods are cut, and the juice runs out in drops, as shown in the picture.

liquor can change a person. Drinking people often become careless, or rough, or cross; and sometimes they do very wicked things indeed. Some beat the members of their families, and their animals, and even kill people. They are so different when drunk that their friends and families often look in wonder to see them so changed by a glass or two of whisky.

All laws should be obeyed. Even though people are very much better without alcoholic drinks, there are a great many who do not like our American prohibition law.

Some of them do not like prohibition because they want alcoholic drinks, such as beer and whisky, to drink. Some do not like the law because they want to make money selling liquor.

No matter whether we like the prohibition law or not, it is the law, and we should all obey it as long as

Fig. 161. Cocaine and several other drugs are obtained from the leaves of the coca plant, a little bush plant not at all like the cacao or chocolate tree, or like the coconut palm.

it remains the law. It is as much our duty to obey this law as the law against theft, robbery, forgery, or any other law of our country.

Other harmful things. There are other drugs besides alcohol that are very bad for us, dulling our minds, and taking away our self-control and our will to do the right things.

One of these drugs is opium. It comes from the

fruits of the poppy plant. Morphine and laudanum also come from the poppy fruits.

Cocaine is a drug made from the coca plant. This is a bushy plant, very different from the coconut palm from which we get coconuts, and also different from

FIG. 162. This shows a branch from the chocolate or cacao plant. The seeds, which are ground to make chocolate, grow in large pods as shown in this picture.

the chocolate (or cacao) tree, from which we get the useful foods, cocoa and chocolate.

How drug habits are formed. When people are in great pain they may be given drugs like morphine to drive away or relieve pain, just as a doctor gives a patient ether or gas before an operation.

When an illness is a long, hard one, and it is necessary to give the patient many doses to dull the pain, a doctor is usually very careful to use several different drugs, so that the patient does not form a habit for

any special drug, such as morphine or cocaine. There are several new drugs which are better than the old ones because they relieve pain but do not lead to drug habits. A great many very bright and clever people have had their lives spoiled by alcohol or other drugs.

Years ago when people knew less about drugs and the habits they cause, they used to give babies medicines to keep them quiet. When a baby cried or when it didn't go to sleep, they gave it a dose of "soothing syrup" or paregoric, both of which contain laudanum. They didn't realize that well babies are good babies, and do not cry, and so instead of finding out why the baby cried, they gave it a drug to make it stop.

Nearly every one knows better now. Such drugs are very bad for little babies. They may keep them from growing and developing properly, and so spoil their whole lives.

Patent medicines and habits. Those who take patent medicines think this or that kind of medicine makes them feel better — brighter and stronger. Sometimes they think a medicine helps them so much that they can't get along without their "bitters" or their "tonic" or their "syrup." If they go without, they feel dull or tired, or they have a headache.

That sounds as if they were forming a habit, doesn't it? And that is just what a great many patent medicines make people do. They contain alcohol or other drugs, and people who use them form an alcohol habit or a drug habit. Some of these patent medicines are one-fourth alcohol.

About fifteen years ago (1906) the United States Government passed a law that the labels on patent medicine bottles should have on them both the names and the amount of alcohol or any other habit-forming drugs which they contain.

Now, since the prohibition law was passed (1918), it is also against the law to sell liquors and medicines that contain large amounts of alcohol, without a prescription from a doctor. Such laws protect people because they make it more difficult for them to form alcohol and other drug habits.

Millions of dollars are spent each year in advertising many "patent medicines," but the drug stores do not sell so much as they once did, because people are growing wiser. Some of these medicines really do help make people well, but many of them couldn't possibly do all the labels say they will do. The makers of these medicines do not really care about curing other people; all they want is to make money for themselves. To do this they often try to make people believe that a patent medicine will cure many different diseases. One patent medicine had a label which said it could cure twenty different diseases. Do you think this could be true?

Often we don't know just what is the matter with us, and so we could not choose the right medicine, even if the labels were all true. When we are ill it is safer to see a doctor, so that he can examine us to decide what is the best possible medicine or treatment for us.

Harmful effects of tobacco. Before Columbus came to America, the tobacco plant was not known anywhere else in the world. When Sir Walter Raleigh made his first trip to Virginia, he learned to smoke. You have probably heard the story of how, when he returned to England, his servant became frightened at seeing smoke coming out of Sir Walter's mouth and threw water over him to put out the fire. Since then,

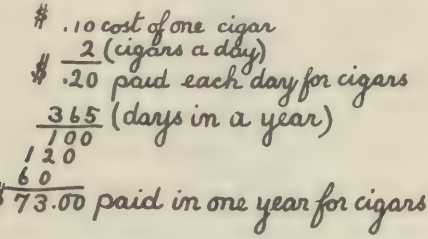

FIG. 163. The cost of one cigar a day amounts to a large sum in a year. Do you spend money on anything that might interfere with your health?

the smoking habit has spread very rapidly indeed, and now it would be impossible to count the number of people who smoke.

Smoking isn't as harmful as using alcohol and drugs; but it isn't really necessary or helpful, and it is a very expensive habit. The more a person smokes, the more he wants to smoke, usually; so that in a year most smokers spend quite a large sum for tobacco.

How much does a cigar or package of cigarettes cost? How many cigars or cigarettes do most of the men you know smoke in a day? Ask some one who smokes how much tobacco costs him each week. How much is that a year?

Smoking often makes people very nervous, too nervous to do their work properly. Sometimes tobacco habits are very hard to break. Joseph Conrad, the writer, once told how hard he found it to stop for even two days: "I could not work; I could not sit still. I was unable even to think properly. Constantly I paced up and down, my hand always going to my

FIG. 164. This picture shows the flowers and upper leaves of a tobacco plant. Is the use of tobacco necessary? Do you know any reasons for using tobacco?

pocket and appearing with a cigarette and matches, which I put back again."

Smoking very often affects the throat. Even if it doesn't make the throat sore, it may keep it irritated and make it more likely to become sore when sore-throat germs get into the mouth.

Smoking may have another bad effect. It makes

some people spit a great deal, and that is a disgusting habit. That is one reason why chewing tobacco seems so much worse than smoking. It makes people spit much more than smoking does. Another reason is that many who chew tobacco make ugly or annoying movements of the jaws. For the same reason constant "gum chewing" in public is not in good taste.

Even though many men do not seem to be harmed by the amount of tobacco they use, there is no doubt that tobacco is bad for growing boys. This is a good reason why no boy should begin to smoke before growth is completed, which means twenty-one to twenty-four years of age. Most persons who can exercise that much self-control need never form the smoking habit.

The school records of young boys are sometimes very different for the boys who smoke and the boys who do not. In Dr. O'Shea's book on the effect of tobacco on the mind, he says that practically all high school principals and teachers agree that the use of tobacco interferes with school work; and that the records of a great many schoolboys, kept for a number of years, showed that when a boy began to use tobacco his work became poorer, compared with that of the boys who did not use it.

Mr. James Peabody, who has worked for thirty years with thousands of high school boys in New York City, says in his book on Biology and Human Welfare that "the ambitious boy, who has any regard for developing a vigorous body fitted for athletic success, for training a mind capable of clear thinking, and for

preparing himself for a successful life work, will resist all temptations to smoke, at least until he has attained his full growth."

Every boy ought to make up his mind that he will put off his first cigar as long as he can. It is harder to

Fig. 165. A branch of the tea plant showing the leaves, which are used for making tea, and also a few flowers.

refuse a cigarette than it is to try one. It is harder to refuse the second cigarette than the first one.

Make up your mind now to see how long you can "stick it out." Can you wait until you cast your first vote? A boy who can control himself in even one little thing like that — or is it a big thing? — has more backbone than one who doesn't "stick it out" — or doesn't even try to.

Temperance in food and drink. Temperance isn't just doing without liquor. We sometimes get that idea because the societies that tried to control alcoholic drinking called themselves temperance societies.

FIG. 166. This spray of coffee plant shows many coffee berries. Each berry holds two of the flat pieces which you see in coffee that has not been ground. (*Courtesy of New York Botanical Garden*)

Some people are intemperate about eating. They eat too much at a meal, and think too much about eating. They love their food just as drunkards love whisky.

Sometimes people are intemperate about just one kind of food. It may be candy, or ice cream, or tea, or coffee.

Tea and coffee are stimulants like alcohol; sometimes "they keep us awake." It is not good to eat or drink things that interfere with our rest and sleep.

FIG. 167. This spray of black pepper shows the leaves and seven of the pods; the pods show a little more clearly in the row at the bottom of the picture. Too much pepper, mustard, and other spices are not good for us. They may lead to overeating and indigestion, and also interfere with our sleep.

Sometimes tea and coffee make people "nervous" or interfere with their health in other ways, such as hindering the digestion of food.

What is your favorite food or drink? Is it anything that could become an injurious habit? If not, enjoy it, but be sure you don't eat too much.

"Be temperate in all things" is an old rule that has been found a good one by all who have practiced it. Nearly all the men and women who have lived to a ripe old age have given it as the one bit of advice for all to heed who want to live long and happy.

THINGS TO ASK, ANSWER, TELL, OR DO

1. Give five reasons why alcoholic drinks should not be used.
2. Why did Benjamin Franklin refuse to drink anything but water?
3. Does alcohol *give* strength or take *away* strength?
4. Why does the use of alcohol so often lead to poverty?
5. Why does this book say that alcohol is like a whip?
6. What effect does alcohol have upon the heart?
7. Does a man lengthen or shorten his life by the use of alcohol?
8. Why is the alcohol habit hard to break?
9. Who suffers most from the alcohol habit, the one who has it or his family?
10. What are some of the reasons why people do not like the prohibition law?
11. Do you think their reasons are big enough to make it right to break the law of the United States? Give reasons for your answer.
12. What other harmful drugs besides alcohol are sometimes used?
13. Why should a doctor, only, give medicine to relieve pain?

14. Find a good reason why babies should not be given "soothing syrup."

15. Why shouldn't people use patent medicines?

16. What has our government done to protect us from patent medicines which contain alcohol or dangerous drugs?

17. Why should we consult a doctor when we are sick instead of trying patent medicines?

18. What is the chief objection to the tobacco habit?

19. Give two bad effects which tobacco may have upon the body.

20. What is the effect of tobacco upon growing children?

21. The boy who wants a vigorous body and clear mind { *should* / *should not* } use tobacco. Which?

CHAPTER XI

SELF-CONTROL

The ten chapters we have just finished have shown us how to keep strong and well. Strong, healthy bodies make it possible for us to enjoy our lives more, to get more out of our work and our play.

But being strong and well is not enough. Our bodies must be under good control. The best automobile is not the one that has the largest body, or the strongest or highest powered engine. The best cars are also easily managed or controlled, and respond readily to the driver's wishes in starting, changing speed, or stopping.

The need for self-control. Think what damage might be caused by a motor car if the driver could not control it. Much of the sorrow and misery in the world is caused by people who do not control themselves properly. People who fail to control themselves usually have to suffer, and very often other people are annoyed, injured, or made to suffer greatly.

A careless child may suffer when he breaks an arm, but is he the only one who is injured by his carelessness? Who suffers most when you are sour and grumpy, or when you scold and whine? Who suffers when a child will not take proper care of his teeth, or when he eats too much rich food or sweets? Who is injured

when a man cannot control his desire for drugs or alcohol?

What self-control is. All this shows the need for self-control. Self-control means two things: it means having such good control over ourselves that we can make ourselves do the things we ought to do and

FIG. 168. What is wrong with this boy's reading position? Who is the only person in the whole world who can give this boy a better sitting position habit? (*Photograph by Edith Ricker*)

that we can keep ourselves from doing the things we ought not to do.

What things do we do which we ought not to do? What things do we not do which we know we ought to do?

To gain self-control. The very best way to gain self-control is to practice it. Set yourself certain tasks or things to do, and do them.

Have you any daily tasks of your own — not tasks that your parents or teachers make you do, but tasks that you set yourself and make yourself do?

Here is a list of tasks some people find difficult to do, unless other people make them. Do they seem hard to you? Find one that will be good for you to do every day this week.

1. Get out of bed the first time you are called; or better still, get up at the right time without being called.

2. Keep a good sitting position.

3. Keep your shoulders straight.

4. Obey the first direction given you; don't wait for a second.

5. Go to bed pleasant.

6. Stop teasing the baby, or the cat, or the dog.

7. Stop watching to see who has the biggest piece of cake or pie.

8. Feel glad when some one else has nice gifts or pleasant surprises.

9. Work when you work.

10. Stop playing *the instant* you are called.

11. Give your playmates the better seat, the first chance, and the larger piece of candy or fruit.

12. Give up your play cheerfully when there is work that needs to be done.

13. Come to meals on time.

14. Hang up your clothes and air your bed properly.

15. Finish a task, once you have begun it.

Control of our temper. Flying into a temper is a childish thing to do, but some people never grow strong enough to stop having fits of temper. If you have a proper regard for others, you will learn to control your temper.

Besides, getting angry uses up a great deal of our strength or energy. Sometimes it interferes with the digestion of our food or with our sleep. It is not always easy to control our temper. That is the reason why the Bible says: "He that ruleth his own spirit is better than he that taketh a city."

We ought to keep as cheerful and calm as we can ourselves, and help other people to be happy and cheerful. With older people, always be obedient and thoughtful. Obey without whining or pouting. Do not scold, or tease, or frighten little children.

Control over fear. If there are things that make you afraid or nervous, talk with your parents or your teacher and find out the best way to overcome your fears. Some people are afraid of the dark, and some of thunder and lightning. The dark cannot harm you, and being afraid of thunder or lightning will not protect you. Do you know any one who is afraid of snakes, cows, dogs, bugs, caterpillars, or any other kind of animal?

Make up your mind you will overcome your fear right away, and go about doing this in a good, sensible way.

If you have no fear of your own to overcome, see if there isn't another boy or girl you can help, for some-

times little children are too shy to tell grown-ups about the things that make them afraid.

Control over our appetites. The athletic coaches who train boys for baseball and football teams, and for such contests as jumping and running, are very careful about the food the boys eat. Often, the school has the boys on such teams eat at a special table — the training

FIG. 169. Does setting aside special tables for school or college teams help them avoid the temptation to eat unsuitable food?

table. There they are sure to have plenty of the right kinds of food, and they aren't tempted by seeing food they should not eat.

Once, after a team had lost a football game, they found that the player who had spoiled their chances of winning by not playing as well as he usually did, had "broken his training." He had been eating a box or more of candy every day, just because he had

formed the habit of chewing something all the time he studied. Of course he might have made the same mistakes, even if he had obeyed the rules. But the boys in the school and the coach didn't feel that way about it. "Anyhow," they said, "he didn't try his best to win for the school." They called him a baby, because they said he acted like a spoiled baby that had to have everything it wanted; and they put another boy in his place, because he was too great a risk to keep on the team.

Another boy on a football team drank some liquor the night before the last and most important game of the season. He let a forward pass go over his head, and so lost the game. His team-mates believe to this day that his drink of liquor was the cause of their defeat.

Self-control in the home. What is the thing that makes most trouble for you at home? Often there is some one little thing that annoys your parents because they feel sure you are forming a habit that you will find hard to break — a habit which will be unpleasant for other people, or one that will prevent you from being or doing all you should be or do, and so make you unhappy.

Perhaps you always take and keep the best seat. It may be that your slowness in dressing in the morning delays breakfast, makes you late for school, and upsets the whole family. You may have some little habit of annoying people when they want to be left alone, or of sulking when you can't have your own way. You

may have a mean trick of teasing the younger children. There is nothing meaner than teasing others about things they cannot help, such as having freckles or being cross-eyed. You may have a habit that affects yourself more than other people, such a bad habit as biting or picking your finger nails.

Whatever it may be, you yourself know where you lack self-control, and *you* know how to make things happy and pleasant. You're the only one who can do it too. Try now, and see how long you can keep it up.

Can you go without things that are not good for you? Can you make yourself do the things you know you ought to do, or which your teachers and parents want you to do?

Self-control is the most difficult task in the world. In how many ways do you rule yourself? Do you refuse candy before meals because you know it is not good for you, or because you are afraid your mother will find you out? Do you keep at your practicing or at your work in the garden or at the woodpile every minute of the assigned half hour just because you are afraid some one will tell on you if you do not?

Self-control through kind deeds. The Boy Scouts have for one of their rules, "Do a kind deed every day." There is a rule that would make better, kinder people than that rule, good as it is. It is, "Every day, do pleasantly some good thing that isn't your first choice." Do something that puts some one else first. Don't just do some little easy thing, even though it may be a kind deed, but do something that takes strong will

power; something that makes you say to yourself, "I'll do this because it's right; the harder it is the more I am determined to do it." That is the spirit that makes real men and women.

Self-control through truth telling. Do you tell the truth even when you know you will be punished? Do you do it just because you are afraid your parents know the truth anyhow — or because you will not let yourself do a cowardly thing like lying?

William Henley, an English poet, once wrote a poem in which he said,

> I am the master of my fate:
> I am the captain of my soul.

Who is the captain or master of your boat — or has it several different captains, who run it whenever they like? Fear and anger and selfishness and greed and lying aren't safe captains to trust with any boat.

Keeping busy. Many of the little quarrels and squabbles among children begin when they have nothing to do — while waiting for meals to be served, or for the time to start to school or church. When children are idle, they are much more likely to get into all kinds of trouble than when they are busy. You have all heard the old saying:

> Satan finds some mischief still
> For idle hands to do.

Some people never waste a minute. If they wake up early, they use that extra time to plan something they are interested in, or to read something they know

they won't have time to read after the regular day's work begins.

Once a boy had to travel on the trolley to school, most of the way along an ugly railroad track where freight cars were standing. Nothing could be more tiresome than that ride, some people said. But this boy kept a list of all the names of railroads he saw, found the full names for all the abbreviations, traced outline maps of the United States from his geography, and put in the railroads he found. That boy didn't have to go to school to learn geography.

There are many interesting things that people can do in their odd minutes. Some girls carry knitting in their pockets or handbags. Some boys whittle or do word puzzles or other interesting things. While you're waiting for dinner, race with your brothers to see who can get the most words beginning with *d*, the most words that end in *r*, or something of that kind.

Try making lists of rhyming words. One person begins with "man," the other one says "can," and so on; the one who fails first loses the game, and the winner can start a new rhyme set.

Keep a pencil and pad in your pocket, and when you have a few minutes try other kinds of word games. You can play them alone. Say to yourself, "I believe I can get at least fifteen other words out of the word "Washington," and then see if you can beat the number you set. Or take the first thing you see out of the window — *tree*, or *smoke*, or *hoe* — and find out how many rhymes you can make for it, or see how many

words you know that have the same number of letters.

There is no better time than such odd minutes to study your spelling list. Haven't you a list of the words you've missed this term? Or why not keep that last multiplication table on a little study card?

Good manners show self-control. We have mentioned many things that show how important it is to have good self-control. In everyday living, in very little things, we find many opportunities to exercise self-control. Do you always greet each member of your family with a pleasant "Good morning"? Do you say politely at the proper times such words as, "Excuse me," "If you please," and "I am sorry"? Do you smile, or do you look glum when you meet people? Do you do something at every meal to help make it a pleasant and interesting time for the rest of the family?

Make yourself do things in the nicest way you can. Don't mutter "Thanks" under your breath, but take time to say "Thank you" pleasantly and distinctly. Haste is not a very good excuse for bad manners. Most people show bad manners when they are in a hurry because good manners haven't become a habit, not because there isn't time to do things in the right way.

Watch the people you know and you will see that those who have the best self-control greet others pleasantly even when they are worried or tired; they do small favors courteously; and they are never too busy or hurried to thank politely those who do them a service.

THINGS TO ASK, ANSWER, TELL, OR DO

1. How many suffer when you get angry and do and say disagreeable things?

2. Finish this sentence: "I read on page —— in Chapter —— that self-control means ——."

3. Make a list of things which you need to learn for self-control.

4. How many of the fifteen tasks listed do you do easily and happily?

5. Which is the hardest task? Is it too hard for you?

6. Give as many reasons as you can think of why you should learn to control your temper.

7. Tell a story of some case of lack of control of appetite causing misfortune.

8. Find a rule which, if followed, would make real men and women of boys and girls.

9. Which will develop a strong character—truth telling for its own sake, or truth telling because it is necessary?

10. What do you do to keep busy in your odd moments?

11. Make a poster about self-control.

12. Sum up all the points in this book which lead to self-control.

SUGGESTIONS TO TEACHERS WHO USE THIS BOOK

By Laura Zirbes

The content of this book, *Health for Every Day*, illustrates certain changes in educational aims, methods, and emphasis, in a manner which should be apparent on examination. In textbooks like this, which stress content values and provide numerous stimuli to action and inquiry, reading must be subordinated and made to serve or *function*. Reading thus becomes incidental in that it sets off, starts, or contributes to trains of thought, realizations of value, interest and inquiry, direct observation, vicarious experience, changes of attitude, and the formation of habits.

The old types of textbooks in this field were too often uninteresting arrays of classified facts for which children had little interest and less use. They were merely intended to be learned and stored away for possible reference at some deferred date. Lest they be forgotten, there was usually some formal requirement for recitation, retention, recall, review, and sometimes the facts were rearranged for reiteration in combination with other facts on more mature levels, where again formal requirements necessitated rereading in preparation for recitation and deferred recall, perhaps reorganization in terms of a review assignment, or *re*hashed and *re*hearsed in preparation for examinations. The repeated use of the prefix *re* is essential to a description of the educational methods which emphasized the ability to trace a morsel of food through the alimentary canal, to trace a drop of blood through the circulatory system, to name all the bones in the upper and lower limbs, to classify muscles and describe

other tissues of the body, to name the layers of the skin, or describe the interior structure of the eye, naming all parts and describing their function. This information was the means of passing tests and examinations in the elementary grades, the high school, normal school, and college. It was also one of several hurdles which had to be run in order to become a licensed teacher or secure a life certificate.

For over fifteen years the writer was required by state law and city courses of study to impart this body of information to children. Nevertheless, it has remained an isolated body of organized facts which has had very little influence on the writer's life, or appreciable effect on the subsequent life-conduct, habits, or attitudes of the thousand or more children who have sat under her instruction.

But here the writer has an opportunity to coöperate in a project by means of which children will *learn how to live* more fully and more happily. Facts will not be learned in isolation but in *meaningful situations, vividly portrayed, and related to existing interests and needs.* Lessons will not be recited, but reflected in attitudes and habits. Useful information will not be systematized for "cold storage," but will instead be abstracted from the matrix in which actual and vicarious experience are psychologically merged. Physiology and hygiene will not be school subjects but abiding life-interests. Health and safety regulations will not be external impositions of law and rule, but preferences and habits based on insight into sound values and human relationships. And in the achievement of this project, *reading* should play a helpful part. While it is used incidentally, its service is so significant and crucial that the manner of its use must not be left to accident. Readings must on no account be assigned by chapter or page, as tasks to be completed. That puts the emphasis on *reading* and on the completion of an assignment, but it does not guarantee purposeful attack nor give the content a fair chance. Nor should a child be allowed to read a book of this sort as he would read a simple narrative or light

fiction. This book is so full of stimuli to thought action and inquiry that rapid independent cursory reading would provide an excess of stimuli in such rapid succession that there would be no time for appropriate response and related activity. The psychological effects would then be overstimulation and underassimilation.

The undesirable after-effects are no less real than the physical effects of habitual gorging or overeating. But that does not imply that the book is to be used as a catechism, or that the facts should be "drilled in" by an unduly intensive attempt at mastery, chapter by chapter.

But what are the questions for, if not for that purpose? And what alternatives are left after these three ways are barred?

In the first place, *learning* is not *memorizing*, but a changing as a result of experience. Drill may drum facts into a child, but if the acquired facts do not mix with the child's past experiences and present life-interests, there is little warrant for the hope that they may affect future acts, thoughts, or feelings. Thus a book about bodily welfare, personal habits, standards of cleanliness, and healthful living loses much of the helpful effect which it would otherwise have by didactic treatment and routine formal assignment.

The aims of this book may best be served by making its use so much like out-of-school experience that there is no sharp line between precept and practice. *First*, the child should always read with the stimulus of a worthwhile purpose. Good "purpose" stimuli should carry the child through the silent reading of a considerable portion of material in one sitting. Such stimuli must take their cue from the child's interests and experiences. They must not be so specific that the child misses everything but one particular detail which is emphasized. They should rather hold the child's mind open to everything and make for the ready recall of personal experiences which are associated in any way with what is read. They must engage attention and enlist activity. Such purposes must in other

words arise in the child from the nature of the situation. The very nature of these requirements makes it both impossible and undesirable to be didactic in these suggestions. To say to a teacher, "This is *the* way to begin" — or "This is *the* question which should be asked" is to violate the very principles herein presented.

It is allowable, however, to give varied illustrations of possible approaches, to show how purposes arise, and how current happenings furnish points of contact.

Introducing the Book as a Whole. Any child's illness or absence can open a brief discussion of reasons for absence, which in turn can lead to interest in avoiding absence — and this gives point to the rapid perusal of the book and a realization of the numerous factors that influence health. There is really no reason why the chapters must be taken in order. The nature of the material makes it quite possible to utilize chapters in any order which the needs of a particular group may suggest.

But the content of most of the chapters is so rich in suggestions for approach that it should be relatively easy to set up real purposes for reading. A few illustrations will suffice.

Suggestions on Chapter I. Unfortunately examples of accidents are numerous. Carelessness and narrow escapes furnish equally psychological approaches. The purpose to avoid needless injury in every possible way leads to the purpose to *read* about ways of avoiding accident. Newspaper accounts of accidents furnish another possible point of departure.

Suggestions on Chapter II. After an outdoor play period a teacher may ask children how they spent their time. She may say that she is just as eager to have them play as she is to have them work, and ask whether they know why she wants them to play. After a few guesses they may be told that Chapter II will give them all her reasons, but that it tells some other interesting things first. This will suffice to keep children alert through about four pages. It may be well to say:

"The end of the chapter is not about play. See whether you know just where to stop to-day. We will stop reading when we come to the part that is not about play. If you read carefully, I think you can guess what we are going to do." There should then be some opportunity for children to show where they stopped reading. The teacher may then say, "That was almost like a game, wasn't it? Now, who can guess what we are going to do?" Various games should be played to illustrate the variety of types of play. This may lead back to the book. The teacher may say, "We want to play as many different kinds of games as possible. What were some of the kinds of play that you read about? Even if we could name them all we could not play them all *here*, could we?" As the games proceed, some points of value may be brought out by questions like the following: "Why was this a good game?" The next day's reading may proceed from a contrast of *play* with *work*, or from a brief exercise period which is proposed because the temperature has been reduced, or because children have been confined to their seats. After the reading certain exercises may be used illustratively.

Introducing Other Chapters. It should not be necessary to indicate how reading purposes may arise from materials, children's questions, pictures, cases of discipline, or need. The child who is habitually late furnishes opportunity for discussing the topic of Chapter III. The child who puts things into his mouth introduces Chapter VIII. The child whose hands are dirty when he comes to school points to the value of Chapter VII before and after reading. The child who has no handkerchief, the child who munches candy between meals, the child who holds his book too close to his eyes, all furnish opportunities or leads which may be utilized. The presence of a little microscope may also lead to Chapter VIII. A sudden change in weather may lead to Chapter VI. But the teacher need not wait for the weather. Pictures of fur-bearing animals prove equally effective.

After Silent Reading—What? If the first silent reading of a chapter is purposeful, suggestions for further activity may be expected from the children. But the teacher must not depend too heavily on the children's initiative and should be ready with suggestions in case there is a need. She may say "Did that chapter make you want to *do* something? What was it?" Perhaps it was an experiment which the children would like to perform themselves. That possibility is suggested by Chapters II, IV, V, VI, VII, and VIII. Perhaps the chapter suggested that children "ask their teacher to show them or tell them something." There are instances of this sort in a number of chapters. Perhaps there is something to make or do. All such leads are interesting possibilities from which the most profitable and feasible must be selected.

Uses for Silent Reading Checks and Questions. In order to give rapid readers some responsibility while others are finishing, it is well to provide questions for study, problems which require skimming to locate data or assignments of some other sort. If the teacher has reason to wonder whether children read or skip about without actually getting meaning, she will find the following checks and questions particularly helpful. They should also be useful in suggesting topics for discussion and report.

The numbered checks which are to be found at the end of each chapter have been arranged in the sequence in which they are suggested by the text. A teacher will rarely wish to hold each child for every check, but can easily make selections to suit the needs as she finds them. The questions also show the stimulus value of the reading matter, the wealth and variety of learning possibilities which it provides.

Children should often be allowed to choose questions or assignments for report. There should also be group activities, and these are facilitated by the provision of possible checks.

Teachers should notice how varied the reading responses may be. Some questions require the selection of data, others

the organization, still others the location of information. In some cases children summarize stories; in other cases they extract the total meaning or point of an illustration. Again, they express ideas in action, or in drawings, or in dramatization. This variety is not accidental, but essential and purposeful. Impromptu questions could hardly be expected to cover as wide a range of objectives as the checks which have been grouped under "Things to Ask, Answer, Tell, or Do."

Use of Illustrations. A few suggestions will indicate how the illustrations in this book may serve worthwhile purposes.

I. Have a "screen" on which you write or expose sentences or phrases like the following:

Find a picture which shows:

a dangerous toy	a jolly game
a foolish boy	a brave rescue
a careful child	a poor position
a lucky bird	animals at play
something poisonous	a home-made shower bath

Scores of such phrases may be made and they may serve varied purposes. They are far more worth while when related to content. Those given are very simple.

II. Other suggestions may be more complex or may be made to serve other purposes. For instance, the following use of pictures leads to a generalization:

1. Look for all the pictures which show that things need food in order to grow. Write down the numbers of the pictures on your paper.

2. Prove a given point with three pictures.

III. The following suggestions lead to a reorganization of ideas and a realization of new relationships:

1. Find all the outdoor pictures. Write their numbers under one of the following headings:

A Good Place to Be
A Bad Place to Be

2. Find all the pictures which have a boy or a girl in them. Write their numbers under these headings:

Things I Should Like to Do Too
Things I Should Never Do

IV. Each of the following suggestions leads to a careful scrutiny of a single picture or chart.

Find the boy who is standing straightest and tallest.
Look for a child who seems to be afraid of the water.
Find out how much you should weigh.
Count the teeth which have a cutting edge.

V. The following suggestions lead to the search for a single picture in a chapter which has previously been read:

1. A child comes forward and reads a picture legend orally. The other children look for the picture.

2. A group of children reproduce a picture in action and the first child to find the picture reads the legend which describes it.

VI. A few additional values are suggested in conclusion:

1. The teacher tells an incident or a story. The children find a picture which is apropos.

2. The teacher puts the numbers of three or more pictures on the board. The children look up the pictures and give the series an appropriate name.

3. The teacher writes a brief health story on the board. The children are invited to illustrate the story.

Conclusion. The climax may well be a health pageant or program in which every child takes part. This furnishes an excellent purpose for rereading parts of the book, and a memorable means of summarizing its value.